



GLASS

FOR EVERY INDUSTRY

Hires-Turner Glass Company
Philadelphia, Pa.
Rochester, N.Y. Washington, D.C.
New York, N.Y.



GLASS

FOR

EVERY INDUSTRY



HIRES TURNER GLASS COMPANY

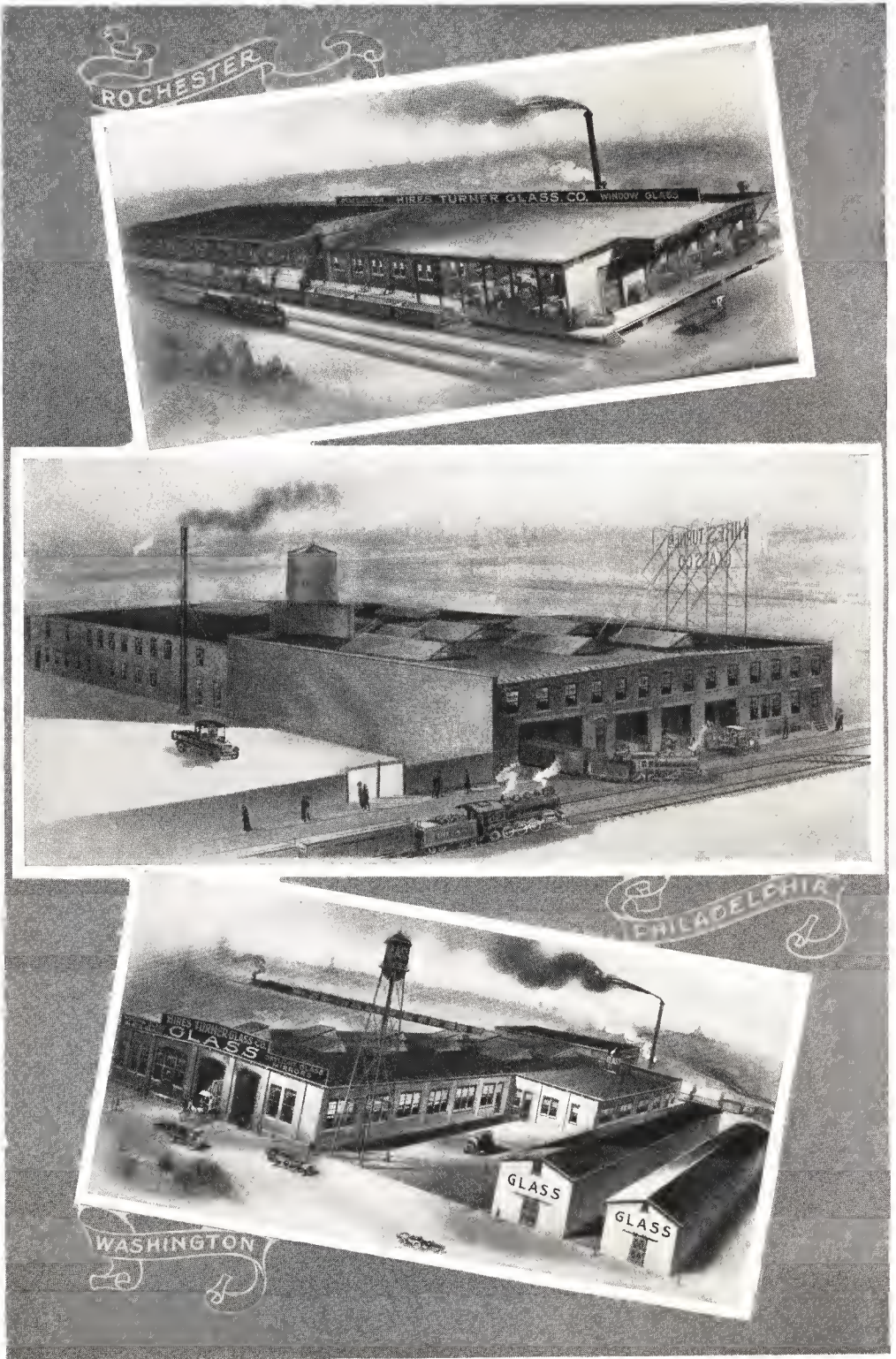
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HIRES TURNER GLASS COMPANY



HIRES TURNER GLASS CO.'S PLANTS

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“Lighthouse” Quality

GLASS

for Every Industry

Published in Four Languages

This, our new catalog of “LIGHTHOUSE” Quality Glass and Accessories, is published in four languages—English, Spanish, French and Portuguese, and has been prepared for the convenience and information of Purchasers of Glass for Every Industry, including, Wholesalers, Retailers, Architects Contractors and Builders.

“Lighthouse” Quality

All products are described herein as “LIGHTHOUSE” Quality. The purpose of this is to assure customers that the grading of glass is guaranteed as represented. Therefore our registered trade mark, an illustration of a lighthouse, is an assurance of the highest standard in the particular quality of glass purchased.

All Information Instantly Available

In the volume you will find complete information concerning all of the various kinds of “LIGHTHOUSE” Quality Glass for building and certain other accessory purposes, including plate glass, window glass, wire glass, rolled glass, “Safetee” glass, leaded art and decorative glass and mirrors, also sizes, weights, and other data useful to buyers and consumers. Any or all of this information is instantly available by a reference to the “Table of Contents” on the preceding pages.

Special Service

Your inquiries are invited. It will be a pleasure to give you the benefit of our valuable fund of information gained from a wide experience in connection with the use and installation of glass in accordance with the most advanced methods of building construction, for lighting, ventilating, fire retarding, sanitating, decorating, reflecting, protecting furniture, and making store display windows; also for use in automobiles, aeroplanes, railway coaches, and ships.

Orders and Shipments

All orders are executed with the highest efficiency of workmanship. Shipments are carefully packed to carry safely and are loaded at and forwarded directly from special railroad sidings in our warehouses or at factories to any and all points. Also, we are equipped to make quick deliveries to nearby places by high-powered motor trucks. Complete stocks are always carried and we can make prompt shipments at any time.

The courtesies of Associate Manufacturers and the National Glass Distributors' Association in the preparation of this catalog are acknowledged with genuine appreciation.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

POLISHED
PLATE GLASS

Pages nine to forty-one



Large sheet "Lighthouse" Quality Polished Plate Glass, 120" x 180"—requiring eight men to handle.

"Lighthouse" Quality Polished Plate Glass

ORIGIN—Polished Plate Glass was first made in France in 1688. The term "French Plate Glass" or "French Mirrors" has its origin from the development of the industry in that country. Owing to the extensive manufacture of Plate Glass in this country the term "French Plate" is no longer applicable.

INTRODUCTION OF INDUSTRY IN THE UNITED STATES—The first piece of plate glass was cast in the United States in 1860. The process was perfected a few years later. Window glass was made during the early settlement days at Jamestown, Va., about 1608. Therefore, plate glass is a very modern product as compared with window glass. The making of window glass has been included in the industries of almost every country and dates back centuries ago. Probably, the Egyptians were the originators.



Mixing the ingredients from which glass is produced.

DIFFERENCE BETWEEN PLATE AND WINDOW GLASS—The raw materials are practically the same in plate glass as in window glass—the main difference is in the great care exercised in selecting and purifying the ingredients of plate glass; also, the elaborate method of casting, grinding, and polishing as compared to the simple and rapid process of producing window glass from blown cylinders. In manufacturing, both require skill and utmost care, but while the methods of production remain so widely different, window glass will never equal plate glass in appearance or efficiency.

INGREDIENTS—Silica (white sand), soda (soda-ash), and lime (limestone); also arsenic, charcoal, and cullet (broken glass) are the principal ingredients of plate glass.

PRODUCTION—Little is known by the average layman concerning the multitude of men, the extensive factory properties, and the enormous financial investment necessary to produce polished plate glass. The manufacturing process includes mixing, melting, casting, rolling, annealing, cutting, grinding, and polishing; also the mining of silica and coal, the quarrying of limestone, the chemical manufacture of soda-ash on a large scale, the reduction and treatment of fire clay, and an elaborate system of pot-making for crucibles.

POTS—The production and use of fire clay pots bear so important a part in the manufacture of plate glass that the subject deserves special con-



Ovens in which the batch is melted in pots into molten glass.

sideration here. These pots constitute one of the heaviest expenses of the industry. This is due mainly to the slow, laborious process of producing them; also to the difficulty of obtaining suitable clay.

CLAY—Before the World War, most of the clay used in manufacturing pots was imported. The difficulty to obtain this clay during the War caused chemists to look for a substitute. A blend of domestic clays was discovered to be highly satisfactory.

CONSTRUCTION—The different clays after being mined are exposed to the weather for some time to bring about disintegration. After the proper stage has been reached, this material is finely sifted and mixed with coarse burned clay and water. This reduces the liability of shrinkage and cracking. The material is then “pugged” or kneaded in a mill, and afterwards kept a long time (frequently a year) in storage bins to ripen. Next, it goes through the laborious process of “treading.” No machinery thus far has been invented to produce a plasticity equal to that attained by the primitive treading of the bare feet of men. The clay must be treaded many times. The final building or forming of the pot is performed by hand, and is a slow, tedious operation. Much time is consumed, but this is absolutely essential. Without extreme care, the life of the pot might be greatly lessened, or some of the elements used in its construction would be fused into glass while undergoing the intense heat of the furnace; or it might even break in the mere handling. Much depends upon the strength of the pot. An average one must hold about a ton of molten glass, and the usual furnace heat is about 3,000 degrees Fahrenheit. After completion, the pot must be “dried out.” This is another feature in which the greatest scientific care is required. No pot may be used until it has been left to season for at least three months, and even a year is desirable. And after all this it has but about twenty-five days of usefulness.



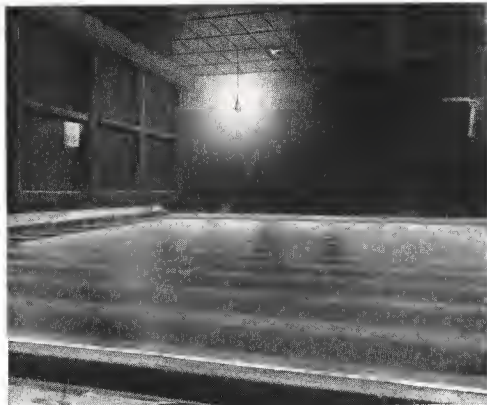
Pouring molten glass from pot on to casting table. Notice large roller which passes over the "pour," flattening it out into sheet form.

MELTING—After having been brought to the necessary high temperature, the pot is filled with a mixture of ground silica, soda, lime, cullet, etc. This mixture is called the "batch." Melting reduces the bulk of this batch so much that the pot must be filled three times before it contains a sufficient charge of metal. When the molten stage is reached, the pot is lifted out of the furnace with a crane and carefully skimmed to remove surface impurities. Then it is carried overhead by a tramway to the casting table.

CASTING—The casting table is large, flat, massive, and made of iron. It has a heavy iron roller, which covers the full width, and arranged so as to roll the entire length of the table. At the sides of the table are adjustable metal strips which act as gauges to produce plates of glass of different standard thicknesses. The most spectacular phase of the manufacture of plate glass is the casting and rolling of the molten glass. The huge pot containing the liquid glass is carried from the furnace by an overhead crane to the casting table where the contents are poured out in a brilliant, fiery, sticky mass and rolled out into a sheet of glass by a heavy steel roller, the table having previously been covered with a slight sprinkle of sand to prevent the glass plate from sticking to the iron table. The glass changes rapidly from the red molten color to the clear green with which we are familiar, as the roller smooths it out. It is then ready to be started on its journey through the lehr to gradually cool or anneal it.



ANNEALING—The lehr consists of a series of ovens of graduated temperatures. As the plate passes through the lehr, it is gradually cooled off, and when it comes out later at the far end, is of a rough, opaque, almost undulating appearance. Beneath the surface, however, it is as clear as crystal. At the end of the lehr, the plate is inspected very carefully for quality, and then it is sent to the cutter who takes off the rough edges and squares it into the proper dimensions. Now it goes to the grinding room.



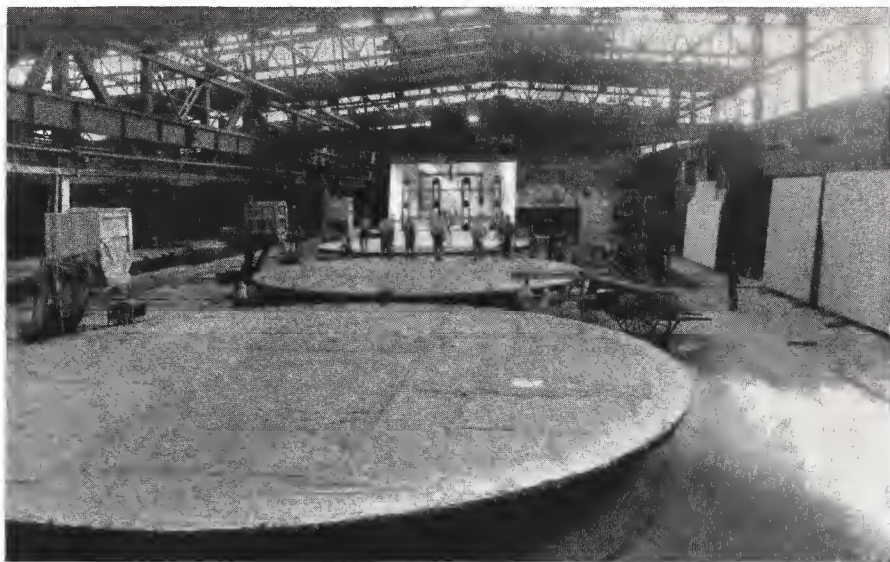
Interior of Lehr, showing cast plate ready to be taken out after being tempered and cooled.

GRINDING—The grinding table is a large, circular, table-like, iron platform, so constructed as to revolve at a high rate of speed. The table is prepared by being flooded with plaster of paris and water; then the glass is carefully lowered on it, and men mount upon the plate and tramp it into place until it is securely set. After this, still greater security is obtained by pegging with specially prepared wooden blocks. Then the table is set in motion. The grinding is done by means of revolving runners. Sharp sand is fed upon the glass, and a stream of water constantly flows over it. After the first cutting by sand, emery is used in a similar manner. The plates of glass are inspected after leaving the grinding room, and if scratches or defects are found they are marked. Frequently, at this stage nicks and fractures are found. In such cases, the plate must be cut and squared again, or if the defects are too great, it is broken up and used for cullet.

POLISHING—This is done on another table by means of special reciprocating machinery, two large circular disks revolving in opposite directions against the upper surface of the plate which is borne by the foundation table. This arrangement permits every part of the plate to be brought beneath the rubbing surface. In polishing, rouge (iron peroxide) is used. This is applied with water, and the rubbing is done by felt attached to the two upper disks. The grinding and polishing reduces the plate to half its original thickness, or even more. The material washed away is lost. Fully half the original weight of lime and soda has vanished. At completion, again the inspectors carefully scrutinize the glass for defects, and any that is not up to a certain standard of quality is rejected.

COLOR—New plate is sea-green, looking at it through the edge. This color gradually fades when exposed to sunlight and weather for a period. In time, it becomes a yellow or light brown due to the action of the elements upon the chemical constituents of the glass. Looking through the glass, it appears as clear as crystal.

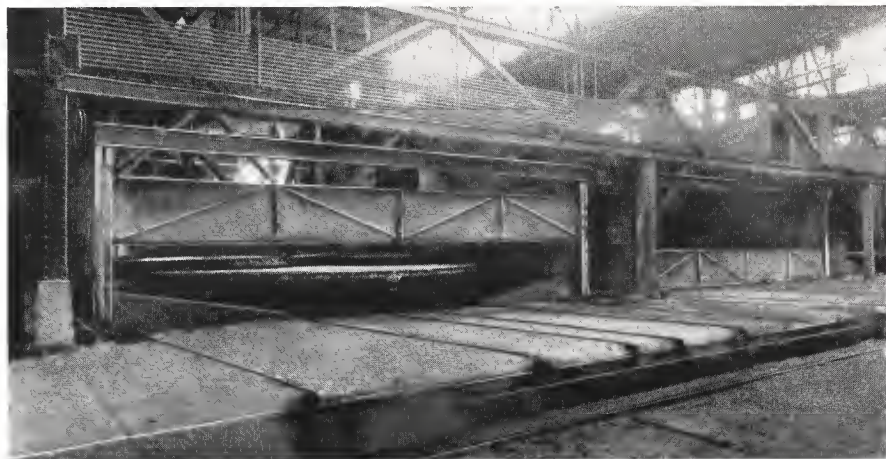
GLAZING QUALITY—For glazing, some defects may appear, but these in no way impair the value, beauty, or durability of the glass. These



Placing large sheet of unpolished plate glass on grinding table by means of a patented device which lifts the glass through the application of rubber suction cups.

defects appear as small seeds or bubbles, short-finish, reams or surface scratches, and are accepted as contingent with the regular run of stock. Even bubbles or shot-holes, not clear through both surfaces, are passed as standard glazing quality, providing the plate is comparatively free from other defects and of good color and finish.

SPECIAL QUALITY—When plate glass of a particular quality is desired, a special selection is necessary. This requires an expert to do the grading,



Grinding tables. Here the unpolished plate undergoes the first or grinding operation.



Polishing tables. Here the final or polishing operation occurs.

and sometimes necessitates cutting down larger sizes to secure suitable pieces with the minimum number of defects in them. Naturally this is expensive and adds considerably to the cost of selected quality plate.

SIZES

Plate glass can be made in extreme sizes up to 250 square feet and in such measurements as

10 ft. by 21 ft. (120" x 252") containing 210 sq. ft.

12 ft. by 20 ft. (144" x 240") containing 240 sq. ft.

13 ft. by 19 ft. (156" x 228") containing 247 sq. ft.

Sizes are usually given in inches.

It is advisable to confine sizes to the ordinary limitations in order to secure prompt and economical deliveries from distributors' stocks.

THICKNESSES

Polished plate glass is manufactured in thicknesses ranging from $\frac{1}{8}$ " to $1\frac{1}{2}$ "; the Standard Product runs from about $\frac{1}{4}$ " to $\frac{5}{16}$ " full. The other thicknesses (whether thicker or thinner) are made specially, and at an increased cost.

The sash or rabbet for regular plate glass glazing should be made to accommodate glass full $\frac{5}{16}$ of an inch thick.

Glass ($\frac{3}{8}$ " to $1\frac{1}{2}$ ") is used for counter tops, deal plates, port and deck lights on ships, aquariums, etc.

One-eighth inch to three-sixteenth inch glass is used largely for residence windows, car and boat sash, automobile wind-shields, and for other special purposes where perfect surfaces, high polish, and absolutely clear vision is wanted with minimum weight.



Pot Making. One of the most tedious and expensive operations of the glass industry.

“Lighthouse” Quality Polished Plate Glass

General Conditions

Owner's Risk

All shipments are made at “Owner's Risk,” unless otherwise instructed, therefore, at the risk of the purchaser in transportation. After delivering to the Transportation Company our responsibility ceases, and the glass becomes the property of the purchaser.

Special Quality or Thickness

When glass of particular quality is desired, a special selection is necessary. This requires an expert in the grading and selection of the material, sometimes necessitates cutting down larger sizes to minimize the amount of defects inherent in the regular production, and adds a proportionate extra cost to special quality plate.

Varies in Thickness

Plate Glass varies in thickness, and will be furnished without selection as to thickness. The price list applies for ordinary glazing

quality, averaging scant $\frac{1}{4}$ to full $\frac{5}{16}$ in thickness, and when special thicknesses or qualities are specified, special prices will be charged.

To Approximate Weight of Polished Plate Glass Boxed

Plate Glass in regular glazing thickness ($\frac{1}{4}$ to $\frac{5}{16}$ thick), weighs $3\frac{1}{2}$ pounds per square foot bare and may be computed at approximately five pounds per square foot boxed for shipment.

Rule for Figuring Domestic Shipping Weight of Plate Glass of This Thickness

Extend the glass at $3\frac{1}{2}$ pounds per square foot. Weight of box equals the contents of a plate of greatest width and length of those packed therein, multiplied by 10. Thus:

1 plate, 36" x 96"	}	= 59' x 3 $\frac{1}{2}$ = 206 $\frac{1}{2}$ pounds
1 plate, 60" x 84"		
Size of box 60" x 96" = 40' x 10 = 400		pounds
		606 $\frac{1}{2}$ pounds



The following table gives average net weights and approximate shipping weights per square foot for the different thicknesses:

Polished Plate Glass

Size.	Average Net Weights. Pounds.	Domestic Approximate Shipping Weights. Pounds.
$\frac{1}{8}$	2	$2\frac{1}{2}$
$\frac{3}{16}$	$2\frac{1}{2}$	$3\frac{1}{4}$
$\frac{1}{4}$	$3\frac{1}{2}$	$4\frac{3}{4}$
$\frac{5}{16}$	$3\frac{3}{4}$	5
$\frac{3}{8}$	5	6
$\frac{1}{2}$	$7\frac{1}{2}$	8
$\frac{5}{8}$	$8\frac{1}{2}$	$9\frac{1}{4}$
$\frac{3}{4}$	$9\frac{1}{2}$	$10\frac{1}{2}$
$\frac{7}{8}$	11	13
1	13	15
$1\frac{1}{4}$	16	19
$1\frac{1}{2}$	20	24

For Export

Plate glass, $\frac{1}{4}$ " to $\frac{5}{16}$ " thick per square foot, packed for export 4 to $5\frac{1}{2}$ lbs., depending on size of glass and quantity packed in case.

Care in Ordering

Architects; builders; buyers generally will insure satisfaction to themselves by exercising care in specifying size, etc. Care in indicating the dimensions is highly essential; for example, 56" and 5' 6" might easily be confused if carelessly written.

An extra charge will be made for all glass returned to stock after being cut to sizes ordered.

How to Measure

In measuring, it is advisable to allow a little play and measure inside the rabbet. See that rabbet is made to accommodate glass of the thickness ordered; i. e., order glass of proper thickness to fit rabbet. Measure the opening and see if all sizes are squared, especially if metal work is to be glazed it is essential to have perfect fit, and in large sizes it is not uncommon to find a warped frame, or not exactly square, slightly different at one side as compared with the other.

Boxing Charges

On all shipments of Plate Glass and Plate Mirrors, **IRRESPECTIVE OF QUANTITY**, boxing is charged in accordance with the Standard Boxing Charge Regulations. No allowance is made for any cases returned.

Insurance

Plate Glass can be insured against breakage in railroad transit for a small fee if arranged with us before shipment is made.

Caution Against Staining

Polished Plate Glass should never be allowed to remain in packing cases longer than necessary, as dampness may stain the surface.



Interior of one of our warehouses.



A modern residence glazed throughout with "Lighthouse" Quality Polished Plate Glass.

"Lighthouse" Quality Polished Plate Glass

is an economy in building residences

It is no longer a luxury. While its manufacture involves a tremendous investment, owing to the comprehensive machinery and the diversified materials used, the cost of production has been so reduced by scientific methods that it is now within the reach of all who would use it.

1. It enhances the appearance and value of the residence from without, and the attractiveness and comfort from within.
2. It has a decided tendency to increase the value of a property in the eyes of a prospective purchaser.



*A medium price house enhanced in value, appearance and comfort by
"Lighthouse" Quality Polished Plate Glass.*

3. It affords accurate vision in any and all directions.
4. It is as strong and tough as the proverbial "whip-cord," and seldom requires replacing on account of breakage.
5. It is a greater protection to human life, body and limb.
6. It resists cold, and retains heat better.
7. It pays for itself over and over again, as a top-covering for highly polished furniture, by affording absolute protection against scratches and blemishes.

As demonstrated above, by adding so much to appearance, convenience, and utility, thereby increasing the pleasures, comforts, and other realizations of ownership, "Lighthouse" Quality Polished Plate Glass is truly an economy in building residences.



Porch enclosure fitted with "Lighthouse" Quality Polished Plate Glass.

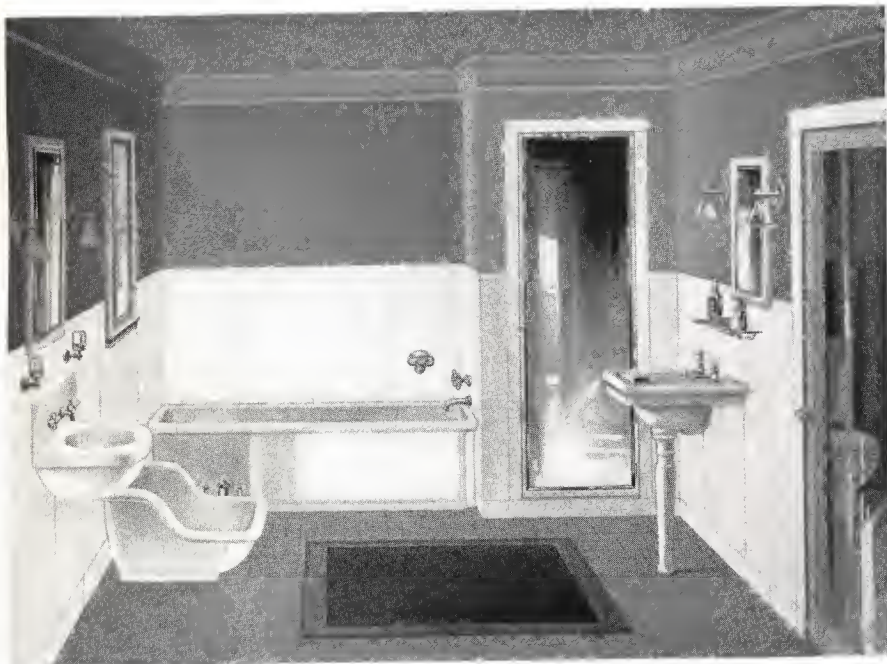
"Lighthouse" Quality Polished Plate Glass

increases value of properties

"Lighthouse" Quality Polished Plate Glass should be placed in the windows of every home.

Because of its beauty, durability, accuracy of vision, heat retentive properties, and a **DECIDED TENDENCY TO INCREASE VALUATION**, it can be classified as a striking economy rather than an expense in building all types of residences.

The highly polished surface and unusual freedom from imperfections so characteristic to other makes of glass, cause "Lighthouse" Quality Polished Plate Glass to afford accurate vision from any and all angles.



*"Lighthouse" Quality Polished Plate Glass and Mirrors in the bathroom.
Notice "Lighthouse-Opal" Wainscoting (see pages 107 and 108).*

*Sanitation, utility and beauty are
three essentials here*

They are found in the bathroom that is equipped with "Lighthouse-Opal" wainscoting, and "Lighthouse" Quality Polished Plate Glass shelves, backboards, and window sills.

Wherever absolute cleanliness and sanitation are desirable and necessary, the non-absorbent and fireproof qualities, as well as the milk-white color-tone of "Lighthouse-Opal," Wainscoting appeal to the discriminating owner.

The installation of full length mirrors in the doors of the bathroom is approved by all architects and builders.





As a centerpiece for the table, and as backs and shelves for the buffet and china closet, "Lighthouse" Quality Polished Plate Glass Mirrors are indispensable.

"Lighthouse" Quality Polished Plate Glass Tops

*for Tables, Desks, Furniture, Show Cases, Shelves, and numerous
other purposes*

IN HOMES AND HOTELS—For dressers, chiffoniers, library tables, sideboards, writing desks, tabourettes and all household furniture with flat surfaces.

IN OFFICES—Desks of all kinds, standing, flat top and roller top.

IN STORES—Counters, tables, and desks.

IN RESTAURANTS AND CAFES—For serving and dining tables.

IN HOSPITALS—On furniture of all kinds.



In the hospital—"Lighthouse" Quality Polished Plate Glass everywhere.

The plate glass top beautifies and protects the most expensive and elaborate furniture. It gives an added appearance of elegance wherever used. Under the protection of these tops the polished surfaces are retained indefinitely.

No scratches by silver, china or other objects.

No stains from liquids or injury through heated articles.

Easily cleaned by the use of a damp cloth.

Its thickness and weight make breakage the exception.

Sanitary, ornamental, useful, economical and durable.

"Lighthouse" Quality Polished Plate Glass Tops, together with a tasty display of "Lighthouse" Quality Plate Glass Mirrors, give an air of luxury and refinement to the surroundings that cannot be secured in any other way.

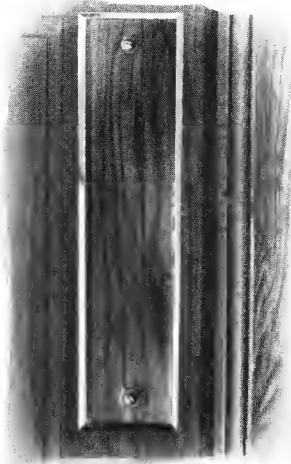
Readers will be interested to learn the various uses of our products as they relate to the home, office, hotels, hospitals, etc.

The cost is moderate. Special shapes are made to fit any piece of furniture.



"Lighthouse" Quality Polished Plate Glass Partitions, Doors, Windows, Ventilators and Counter Tops.

"Lighthouse" Quality Polished Plate Glass Partitions



Push Plates used on swinging doors as a protection to the woodwork.

ELEGANCE AND DISTINCTION—Installations of "Lighthouse" Quality Polished Plate Glass in the partitions of offices or business departments lend a decided tone of elegance and distinction to the interior of business establishments.

CLEAR VISION AND SOUND PROOF—The crystal-clear quality of the highly polished glass affords perfect vision and its weight or thickness prevents sounds passing from one office to another.



"Lighthouse" Quality Polished Plate Glass used throughout.

The "last word" in conservatory construction

Even the conservatory may be made a structure of great beauty through the employment of "Lighthouse" Quality Polished Plate Glass in its construction.

The crystal-like clearness, and freedom from blisters and blemishes cause it to perfectly fulfill the exacting requirements of light diffusion which are peculiar to buildings of this character.

COMMERCIAL GREENHOUSES—Use standard qualities Window Glass—"A" and "B" qualities. Single and double strengths—but principally "A" quality, double strength. See pages 59, 61, 62, 63.



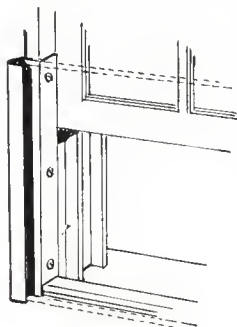
Fresh air without draft.

“Lighthouse” Quality Polished Plate Glass Ventilators

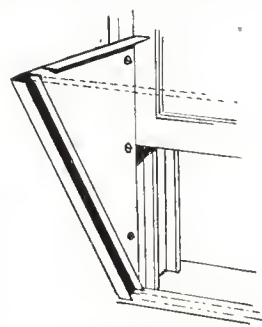
1. *Furnish an abundance of fresh air every hour of the day and night, and are conducive to good health, comfort, and efficiency.*
2. *Do away with drafts such as occur through open windows, and therefore prevent colds and sickness.*
3. *Afford protection against storms. Rain, snow, dust, and wind cannot beat into the room, and damage furniture and floor coverings. In the office or factory papers and materials cannot be blown out of place.*

Those who leave the home or place of business and “forget” to close the windows need have no apprehension about the unexpected storm.

4. *Do not distort or interfere with vision. Their highly polished surface and crystal-like clearness permit an absolutely perfect perspective in any and all directions.*



Style No. 1.



Style No. 2.



Perfect ventilation in the home.

5. Do not interfere with the arrangements of curtains and draperies.
6. Do not collect dirt and are easily cleaned.
7. Are simply constructed. Anyone can install them. Merely attach the two brackets to the window boards, and insert glass in the grooves provided in brackets.
8. Economical to install, cost nothing to operate.

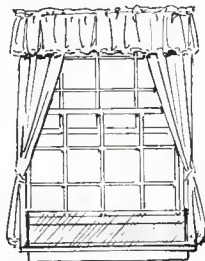
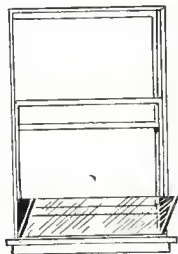
Instructions for Ordering

STYLE No. 1—Measure distance between sash beads of window frames and add $\frac{3}{4}$ -inch for space utilized by Polished Plate Glass in holders.

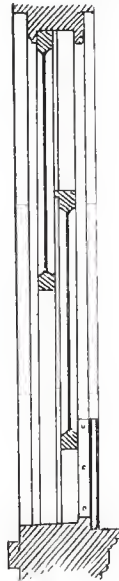
STYLE No. 2—Give measurement for the distance between sash beads of the window frames and deduct $\frac{1}{4}$ -inch allowance for holders. This style ventilator gives greatest satisfaction and is invariably used.



Style No. 1.



Style No. 2.





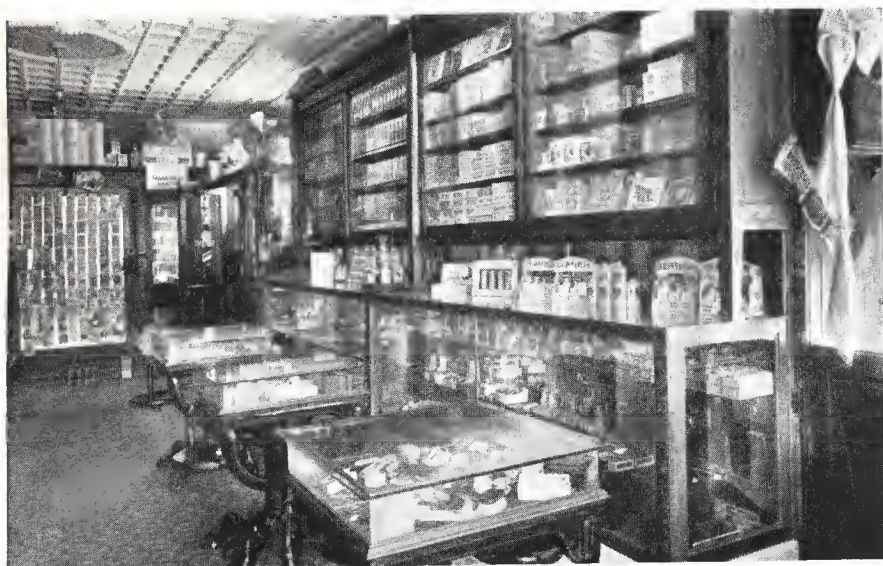
Showing possibilities of modern furnishing shop when equipped with "Lighthouse" Quality Polished Plate Glass show cases, shelves, doors and mirrors.

"Lighthouse" Quality Polished Plate Glass

*Show Cases, Shelving, Table Tops, Counters and Mirrors
for all types of stores.*

- increase sales.
- bring shoppers into direct contact with goods.
- show everything in stock.
- permit inspection and selection without handling.
- minimize breaking and soiling of goods.
- save customers' and clerks' time.
- lead to additional sales.
- beautify the store.
- create a favorable impression upon shoppers.
- cause trade to return and bring others.
- are sanitary and dust proof.
- are easy to keep bright and clean.
- always look attractive.
- last indefinitely.
- make more profits and pay bigger dividends.

SERVICE—Our Engineering Department is eager at all times to coöperate with architects, contractors, and merchants, in preparing suggestions for up-to-date "Lighthouse" Quality STORE FIXTURES. The heads of this department will deem it a pleasure to give inquirers the benefit of all the valuable advice which our wide experience in connection with modern store fixtures places at our command.



DRUG STORE—Every article on full dress display and easy access—but entirely protected from dust and dirt. Note plate glass shelves, sliding doors and tables.



GROCERY STORE—“Lighthouse” Quality Polished Plate Glass in refrigerator doors and in bins; also on all counters. Sanitary and easily cleaned.



BUTCHER SHOP—Polished plate glass cases and counters. Notice double counter and “LIGHTHOUSE-OPAL” Wainscoting. Everything on display, yet sanitary and neat. (See pages 107, 108. “Lighthouse-Opal” Department.)



BARBER SHOP—The newest thing in barber shops. Beautiful polished plate glass mirrors, service stand, table top, shelves, and display case. Sanitary and attractive.



JEWELRY STORE—Showing how “Lighthouse” Quality Polished Plate Glass Show Cases and Mirrors can be utilized around pillars to secure advantageous display, maximum attractiveness and economy of space.



HARDWARE STORE—Polished plate glass show cases, counters, and shelves throughout the establishment.



*“Lighthouse”
Quality
Polished
Plate Glass
Display
Racks*

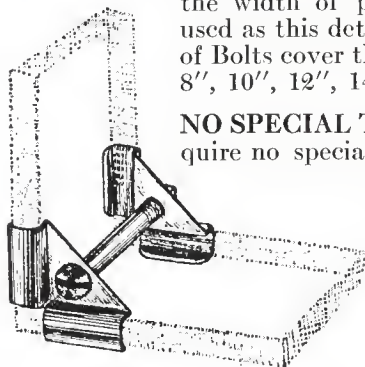
*Equipped with
“Dosi” Bi-Clamp*



The newest, neatest and most attractive Store Display Aid yet conceived. A real salesman in any retail store.

DOSI BI-CLAMP—The Dosi Bi-Clamp is a patented device made to simultaneously clamp the adjoining parts of two glass plates edgewise between adjustable jaws, and thereby hold the plates securely together. By its use plates may be assembled to form racks, bins, shelf stands of almost endless variety, and the only tool required is a screw driver.

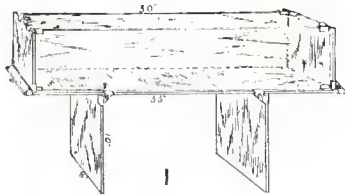
STANDARD SIZE—The standard size will fit glass plates varying from $\frac{1}{4}$ to $\frac{5}{16}$ inches in thickness. Orders should always specify the width of plates with which the Bi-Clamps are to be used as this determines the length of bolts. Standard length of Bolts cover the following widths of glass only: 3", 4", 6", 8", 10", 12", 14", 16", 18".



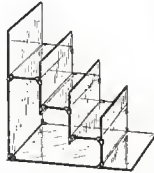
Showing the Dosi Bi-Clamp holding two small plates of glass. It illustrates how the Bi-Clamp is applied.

NO SPECIAL TREATMENT OF PLATES—The plates require no special treatment to suit them for use with the Bi-Clamp, no holes or notches of any kind are required. Their edges may be ground and polished with corners rounded or may be left rough with corners merely “swiped” depending upon the finish desired.

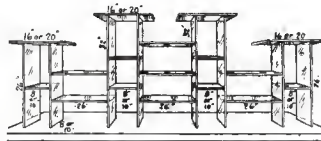
See the opposite page for a few possible combinations of “Lighthouse” Quality Polished Plate Glass Display Racks equipped with Dosi Bi-Clamp which can be furnished in a variety of lengths and widths.



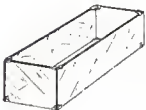
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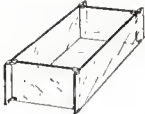
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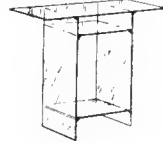
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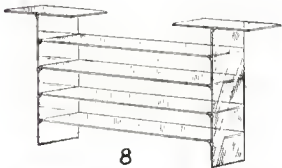
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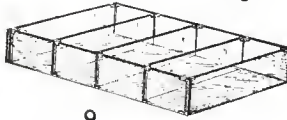
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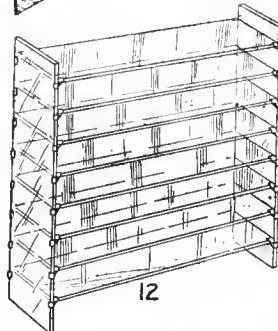
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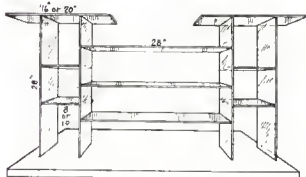
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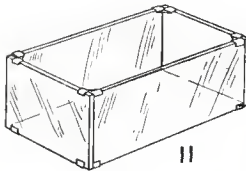
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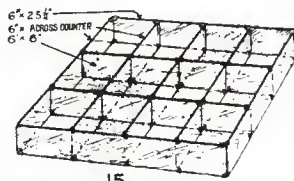
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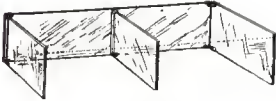
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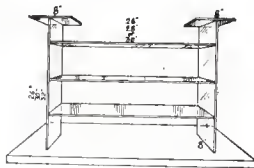
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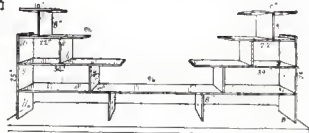
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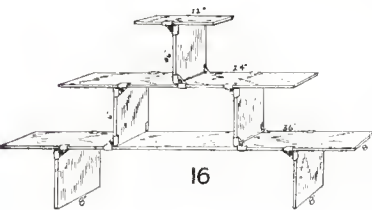
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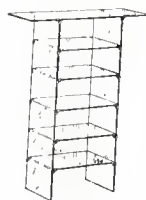
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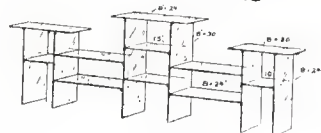
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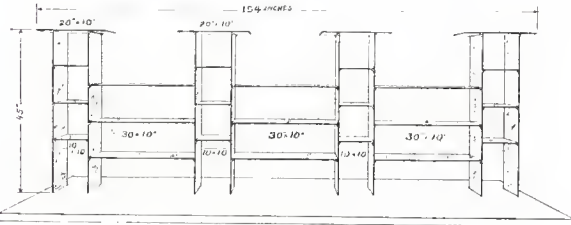
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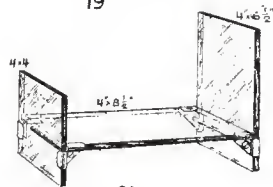
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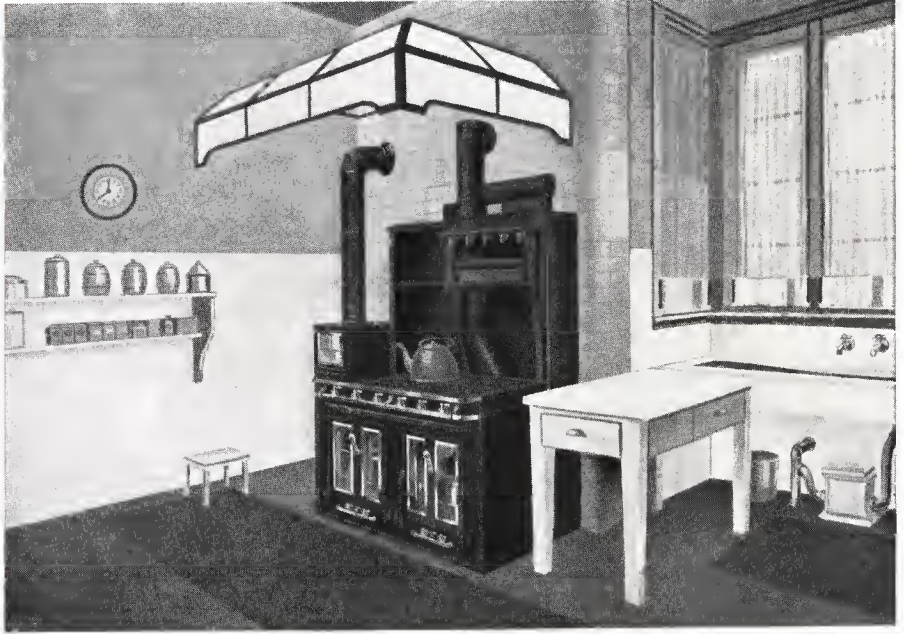


20



21

Glass Display Racks. See description on page 32.



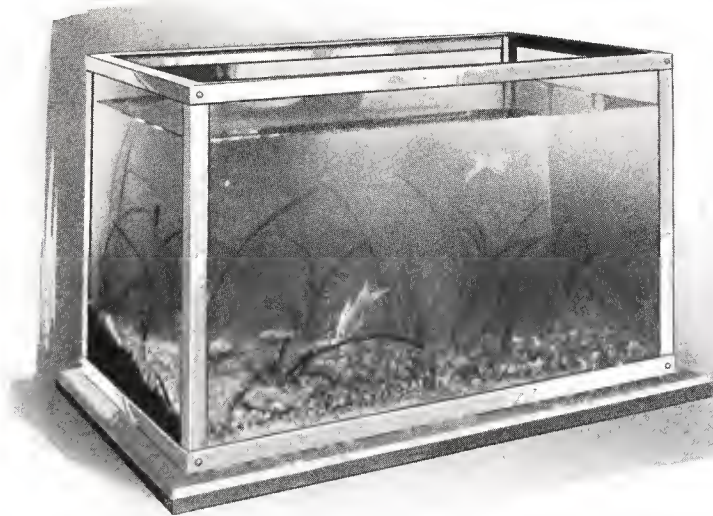
Neat, sanitary and easily cleaned. Note "Lighthouse" Quality Polished Plate Glass in oven doors, and ventilators. "Lighthouse-Opal" Wainscoting and Table Tops (see page 112 for "Lighthouse-Opal" Department). Wire glass hood over oven (see pages 69 to 80 for "Solid" Wire Glass Department).

"Lighthouse" Quality Polished Plate Glass Oven and Machinery Enclosures

KITCHEN RANGES—High grade kitchen ranges are equipped with ovens having "Lighthouse" Quality Polished Plate Glass installed in the doors.

REFRIGERATORS—The better grade of refrigerators also have this practical and pleasing feature incorporated in the construction.

MACHINERY—Cash registers, adding machines, and many other articles of a mechanical nature are now being manufactured with the working parts enclosed in "Lighthouse" Quality Polished Plate Glass.



*“Lighthouse” Quality
Polished Plate Glass
Aquariums*

BEAUTIFY—In the home, institution and even in many business offices “Lighthouse” Quality Polished Plate Glass aquariums are being installed to beautify and lend interest to the surroundings.

USEFUL—In addition to its value as an attraction and object of interest, an aquarium will be found highly useful in assisting to keep a necessary amount of moisture in the atmosphere of the room.

ADVANTAGES OF BUILT-UP STYLE—The fish and other objects in the built-up aquarium are not distorted to the view as in a globe. Too, experienced fish fanciers and breeders claim that fish do much better in the built-up aquarium.

GLASS CUT TO ORDER FOR ANY SIZE TANK—We are equipped to furnish to specification “Lighthouse” Quality Polished Plate Glass cut, ground, and polished ready to fit any size aquarium.



*“Lighthouse”
Quality
Polished
Plate
Glass
Railway
Coach
Windows*

Coaches—Day and Pullman.

CLEAR VISION—The prime essential in the windows of railway passenger coaches of all classes is clear vision in any and all directions. “Lighthouse” Quality Polished Plate Glass fulfills this requirement to the nth degree.

PROTECTION TO HUMAN LIFE—Strong and tough as the proverbial “whip-cord”, it affords much greater protection to human life, body and limb than ordinary window glass.

QUICKLY PAYS FOR ITSELF—Seldom requires replacing on account of breakage and thus quickly pays for itself.

FURNISHED in any size and quantity according to specification.



Electric Coach.



*“Lighthouse” Quality
Polished Plate
Ship, Deck and Port Hole Glass*

SUPPLIED to specification, cut in any shape, with ground or polished edges, with or without bevel, and any size or quantity desired.

THICKNESSES— $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ",
 $\frac{7}{8}$ ", 1".

All glass heavier than $\frac{3}{8}$ " is of special manufacture.

POLISHED WIRE PORT HOLE GLASS—Certain thicknesses of this glass may be had with wire inserted.





Clear vision and atmosphere of luxuriousness furnished by "Lighthouse" Quality Polished Plate Glass.

***"Lighthouse" Quality Polished
Plate Glass
Auto Windshields and
Enclosures***

CLEAR VISION—The highly polished surface and crystal like clearness of "Lighthouse" Quality Polished Plate Glass affording absolutely accurate vision in any and all directions, make it ideal for use in automobiles both for windshields and body enclosures of all types.

SUPPLIED to builder's specifications cut to any shape, with or without bevel, ground, or polished edges, and in any size or quantity desired.

LENSES, MIRRORS AND TAIL-LIGHTS—Descriptions and illustrations on pages 103, 104, 105.



Will not splinter and fly apart even under heavy impact.

“Lighthouse” Quality Safetee Glass

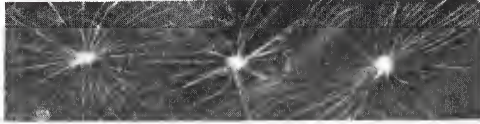
WONT SHATTER OR FLY

ENTIRE OUTPUT COMMANDEERED BY UNITED STATES GOVERNMENT DURING WORLD WAR—Upon the entrance of the United States into the World War the entire output of “Safetee” Glass was commandeered by the Government. *8,000,000 Gas Mask Lenses were supplied and additional thousands of square feet of “Safetee” Glass were furnished for aeroplane windshields and cabin lights in hydroplanes.* No stronger testimonial of the efficiency of this product can be offered than the statement of this fact. The end of the war has made “Safetee” Glass available for commercial purposes.

WHAT IT IS—Two pieces of Polished Plate Glass with a sheet of celluloid between them are simply welded together under high temperature and tremendous pressure. Practically any color of glass can be obtained by means of using specially colored celluloid. “Safetee” Glass is also made with thin blown sheet glass, but is then adaptable to very small sizes only.

NO FLYING GLASS—“Safetee” Glass is a perfectly solid sheet possessing the transparency of the best plate glass, with the strength of a sheet of metal and the resiliency of a billiard ball. If struck a powerful blow by a hard missile, it will crack into fine hair lines, but there is no shower of flying glass.

FOR AUTOMOBILES—Conservative automobilists are demanding “Safetee” Glass as an insurance against death, or ugly, life-long scars, which might be caused by the jagged ends of broken or flying glass.



The effect of three powerful blows.

FOR BANKS AND OFFICES—In banks and offices, in case of strikes or riots, "Safetee" Glass gives security without the appearance of it.

This sheet was struck three powerful blows by dropping a two pound lead weight upon it. Each one of these blows would have shattered an ordinary glass windshield into many pieces and thrown dangerous cutting missiles in all directions. This sheet, however, is entirely intact, not the smallest splinter of glass has left the sheet; it is still a rigid and strong sheet, and still a thorough protection against the weather and further impacts.



Strong impacts cause a multitude of hair-like cracks, but no breaks and no flying splinters.

FOR JEWELRY AND OTHER STORE—For jewelers, "Safetee" Glass protects their display cases against the sudden onslaught of robbers and thieves. This also applies to other classes of stores where highly valuable merchandise is carried in stock and placed on display.

How "Safetee" Glass Protects.

INSTALL "SAFETEE" GLASS—Casualty Companies are considering the appeal for lower insurance rates where "Safetee" Glass is used.

THICKNESS—Varies in thickness $\frac{3}{16}$ " full to $\frac{5}{16}$ ", and frames should be made to accommodate this variation in thickness. When made of thin blown sheet glass there is a variation of $\frac{1}{8}$ " to $\frac{3}{16}$ ".

SIZES—"Safetee" Glass cannot be made wider than 20" or longer than 50" without piecing the celluloid. This gives a fine hair line which is in no way objectionable and maintains the maximum security.

"STANDARD"—*Is the highest recognition the Underwriters can make on any device or material.*

BRANCH OFFICES THROUGHOUT
UNITED STATES & CANADA
LONDON, ENGLAND



PRINCIPAL OFFICE AND
TESTING STATION
207 E. OHIO ST. CHICAGO

Oct. 5, 1916.

Super-Glass Co.,
Tacony, Philadelphia,
Pa.

Attention of Mr. Frank Shuman.

Gentlemen:

In compliance with your request for a statement interpreting our recommendation as contained in our report on Super-Glass, dated Sept. 2, 1916, we wish to say that the meaning of our recognition of the material as STANDARD is that it is so recognized for use as intended and that this intended use is stated in the descriptive paragraph of the recommendation sheet of the report.

Among the uses for which it is recommended as STANDARD are: Windows and wind shields for vehicles of all kinds, overhead sky-lights not exposed to a very great fire hazard, lathe, grinding machine and other machine tool chip guards, elevator mirrors, overhead sign construction, coupes and Marquis awnings, protecting coverings for navigation instruments and signal lights aboard ships, windows for protection boxes around boiler gauge glasses, etc.

Very truly yours,
UNDERWRITERS' LABORATORIES,

S. James.
Mech. Engr. Casualty Dept.

SVJ/WO.



Hydroplane fitted with "Safetee" Glass Cabin Lights.

Safetee Glass

WONT SHATTER OR FLY

Aeroplane Windshields

NO EQUAL—For this purpose "Safetee" Glass has no equal. The fact that it is practically non-breakable—will not splinter and fly apart even under heavy impact—and affords perfect vision in any and all directions exactly like the finest quality of polished plate glass, makes this product the ideal glass for windshield duty in aeroplanes.

SUPPLIED—To specifications, cut to any shape, with ground or polished edges, with or without bevel, and in any size or quantity desired.

Photographs taken while machines were in flight.



"Safetee" Glass Windshield on Aeroplane.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

POLISHED PLATE
GLASS MIRRORS

Pages forty-three to fifty-three



Cleansing polished plate glass to receive silver.

“Lighthouse” Quality Polished Plate Glass Mirrors

FINEST GRADE OF GLASS ESSENTIAL—The silvered surface of a mirror magnifies and accentuates the qualities of the glass to such a degree that only the finest grade of plate must be used if good mirrors are to be secured. Every consideration must be given to both surface and general character, as the ordinary defects which would otherwise pass unnoticed are sharply brought out by the covering of silver.

SILVERING—Our formula for the silver solution for making mirrors has been highly developed. We lay particular emphasis upon cleanliness, chemically pure ingredients, distilled water, proper facilities and expert care. These things, the selection of especially fine plate, and the manner of treatment account for the exceptionally high grade mirrors that we produce. “Lighthouse” Quality Polished Plate Glass Mirrors will stand for years without deterioration.

SIZES AND THICKNESSES—These are limited only by the sizes and thicknesses in which it is possible to make plate glass, but it must be remembered that extreme sizes in





Applying silver in the manufacture of "Lighthouse" Quality polished plate glass mirrors.

strictly clear quality plate are very difficult to obtain and necessarily carry some ordinary technical defects, which cannot be entirely eliminated.

MIRRORS—PROPER INSTALLATION—Mirrors are susceptible to the effects of extreme heat or cold, and moisture. They should be mounted with proper protection against dampness. Care should be taken to avoid damp walls and plaster. Leave an air space between wall and back of mirror.



GLAZING FRENCH DOORS OR ON COLONIAL WORK WHERE SMALL MULLION WORK IS SPECIFIED—

Here it is essential to have the panels absolutely upon a uniform line, and the rabbets must be of accurate depth, as otherwise the mirrors will reflect at different angles and distorted reflection result. A perfect effect may be obtained by using a background in a large size mirror, and a false mullion over all.

RESILVERING OLD MIRRORS—We take old mirrors which have become stained, spotted, or peeled and resilver them so that they present an appearance equal to new. This is done by removing all traces of the original backing and treating the glass as in the original silvering process. This work is performed at the owner's risk of breakage. Any defects or scratches in the glass will remain.



Roughing for beginning of bevel.

BEVELING—Five divisions of skilled workmen are necessary to perform this operation. They are, roughers, emeriers, smoothers, white-wheelers, and buffers or polishers. Different abrasives or polishing materials are used, including sand or carborundum, emery, sandstone, pumice, and rouge.

ROUGHING—This is a circular cast-iron disk having a fine cut corrugated surface about 30 inches in diameter, revolving rapidly upon its bearings as a horizontal plane. Sand or carborundum is conveyed to the mill from above through a hopper with a stream of water, so the sand gives the desired roughness

between the iron and the glass while the water minimizes the friction and heat. The edge of the plate is brought into contact with the swiftly moving roughing wheel, and the sand cuts the bevel to the desired depth. Curved and pattern plates with curves, mitres, etc., require the practiced eye and skill of an expert operator.

EMERYING—In the first roughing process, the beveled surface has been cut so deep by the coarse sand that it is necessary to follow with a finer abrasive on another mill. Here emery or finer carborundum is used in order to bring the bevel to a smoother finish.

SMOOTHING—Next comes a still finer smoothing in a stone mill or "smoother." This contrivance is constructed upon the plan of the iron roughing wheel. A circular revolving sandstone of fine texture is used. Water flows upon it to reduce friction.



Emerying.



POLISHING — The first polishing process is performed upon a wood wheel called white wheeling. This wheel is in an upright position. Powdered pumice in solution is automatically splashed upon the wheel by a paddle. Thus the bevel is brought to a dull, milky polish.

FINISHING—The final high-gloss is put upon the beveled surface by the application of rouge upon an upright polishing wheel which is covered with a layer of thick felt.

STANDARD BEVEL — All beveled plate glass or beveled plate mirrors are furnished with $1\frac{1}{2}$ " bevel unless otherwise specified.

REMOVING SCRATCHES—Slight scratches may be removed from the surface of plate glass by rubbing with pure thick felt mounted upon a hand block. Fine red or black rouge, slightly moistened, is used as an abrasive. This operation must be skillfully done in order to avoid over-polishing or "burning" the delicate, annealed surface of the plate.

GRINDING AND POLISHING EDGES OF PLATE GLASS

This is similar to beveling, except that the operation is performed on the edge of the plate instead of the surface. The edge of the glass is rough ground according to specifications, either rounded or squared or chamfered as desired, and finished by the polishing process already described.



White Wheeling.



Grinding Edges.



For Decorative Effects

WHEEL-CUT MITRED WORK

—The lines are cut V shape into the surface of the glass by a vertical wheel with sharp edges, and the polishing is accomplished by the same general process as on the beveled edge.

Decorative effects on door-plates, side-lights, transoms, partition glass, etc., mitre design gives a tone of elegance and beauty. Identical in appearance with the richness of the finest cut tableware.

MITRE DESIGNS—On plate glass mirrors or on rolled figured glass produce a particularly handsome effect where special or elaborate decoration is required.



SPECIAL DESIGNS MADE TO ORDER—Monograms, and original designs may be cut specially to the individual taste or requirements. In such cases it is advisable to submit an accurate drawing with the exact dimensions required indicated thereon.

SHOCKS—The common sheet-mirror or looking-glass used principally for the reflection of light rather than for the detailed image, is known to the trade as a "Shock Mirror." It is made from ordinary cylinder or window glass, and naturally is much *inferior* in quality to Polished Plate Glass Mirrors.



Smoothing Edges.



Scratch polishing.



Polishing surface of plate glass preparatory to silvering.

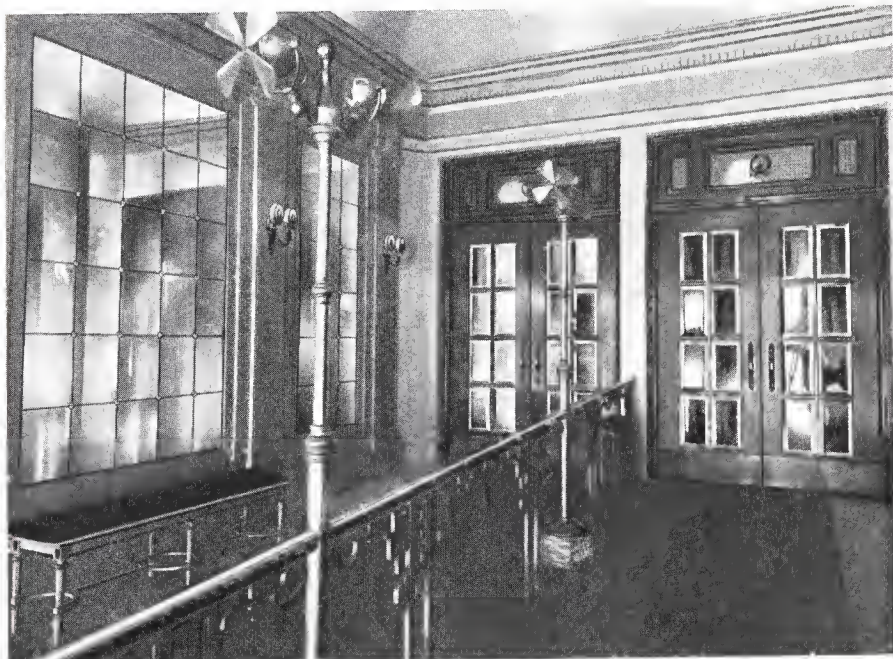


Theatre ticket booth showing glass front with cash and conversation holes.

“Lighthouse” Quality Polished Plate Glass and Mirrors

For Theatres, Hotels, Auditoriums

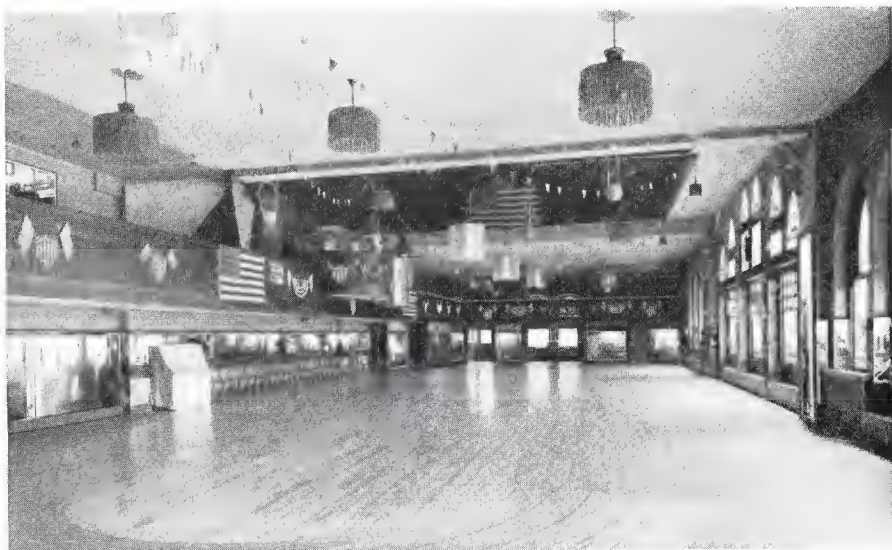
Manufactured to specifications for cash windows, partitions, doors, walls, ceilings and other places where a certain combination of utility and attractiveness is essential.



*"Lighthouse" Quality Mitre Mirrors installed in lobby of high-class motion picture theatre.
Note artistic effect of rosettes at intersections of mirrors on the left.*



*Possible use of "Lighthouse" Quality Polished Plate Glass Mirrors in hotel auditorium,
pillars, walls and ceiling.*



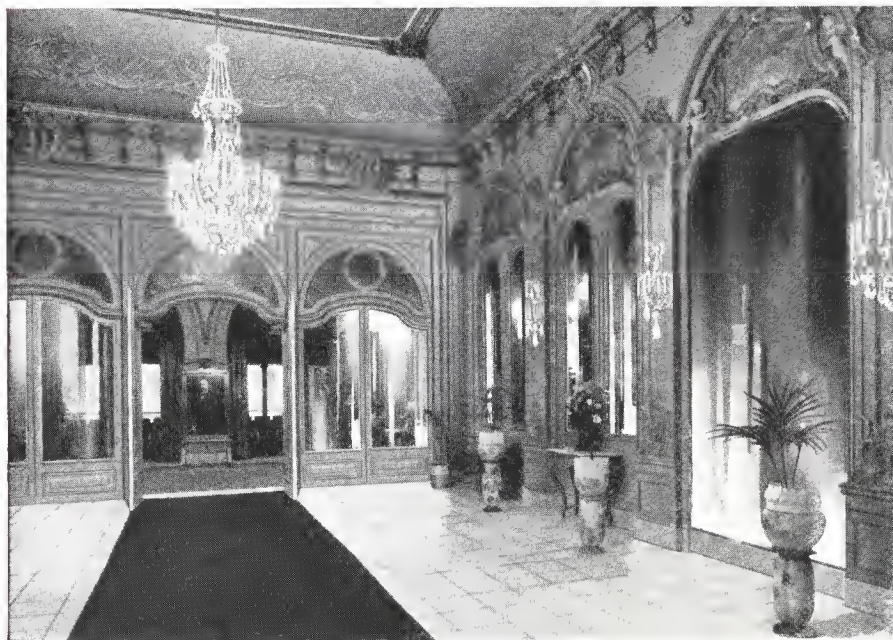
"Lighthouse" Quality Polished Plate Glass Mirrors installed in walls of dance hall.



Effective use of large "Lighthouse" Quality Polished Plate Glass Mirrors in the home.



Modern installation of "Lighthouse" Quality Polished Plate Glass Mirrors in bed room



An effective use for "Lighthouse" Quality Polished Plate Glass Mirrors in hotel lobby.



"Lighthouse" Quality Polished Plate Glass Mirrors, Furniture Tops, Ventilators and Windows.

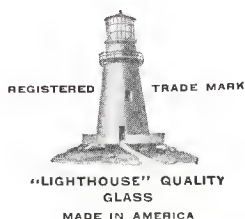


Artistic arrangement of "Lighthouse" Quality Polished Plate Glass Mirrors in reception hall.

HIRES TURNER



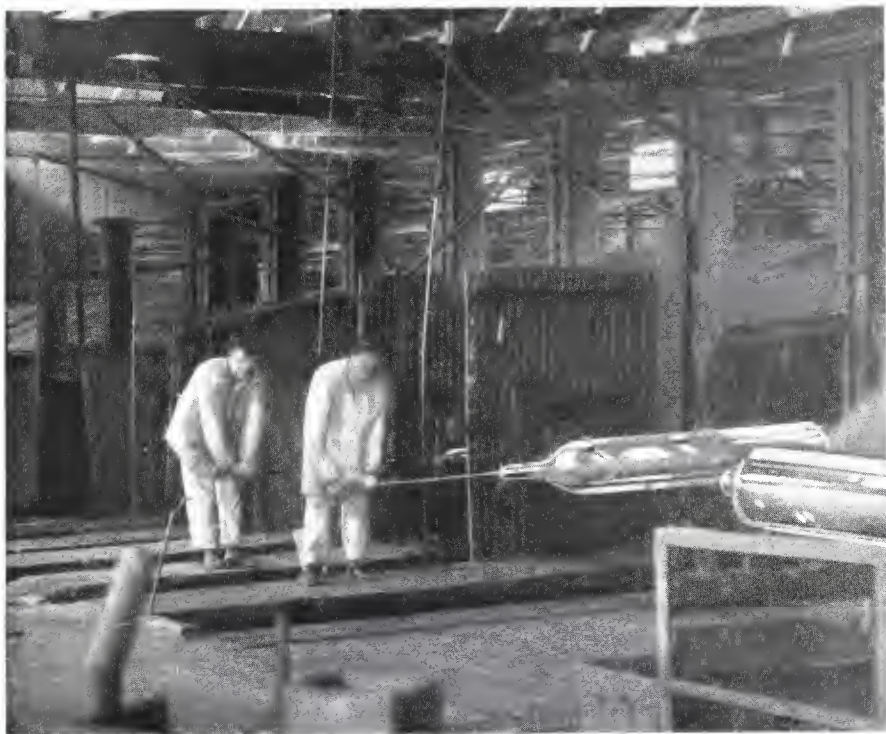
GLASS COMPANY



“Lighthouse” Quality

WINDOW OR
SHEET GLASS

Pages fifty-five to sixty-seven



Manipulating cylinders during blowing operation.

“Lighthouse” Quality Window or Sheet Glass

TWO METHODS OF MANUFACTURE—Window glass is made by two methods—by “machine” or by “hand.” The difference is in the blowing process—both producing the cylinder from which all window glass is evolved. The same general treatment of the cylinder, to produce flat sheet glass follows in both machine or human blown material, and both produce equally standard quality.

HAND PROCESS—To make the cylinder the molten glass or “metal” is brought to proper consistency by extreme heat, and the glass in the human blown process is “gathered” upon the end



Shaping “Gather.”

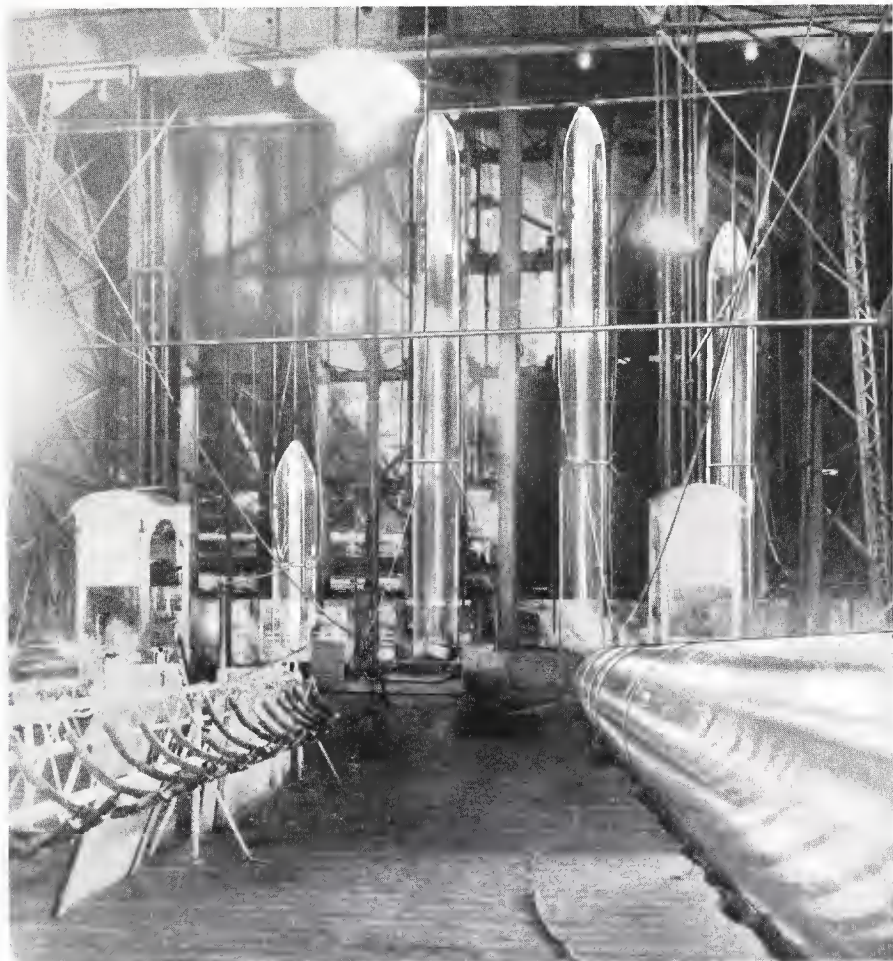


Preparing "gather" or molten glass from tank.

of a tube (or blow-pipe) from the furnace and blown into a huge cylinder by repeated heatings and blowings, until the material is all evenly distributed. From a globular mass about the size of a man's head, the blower swings the pipe to and fro in a pit or opening in the floor, blowing as he swings until the full sized cylinder is formed. This requires skill of the highest degree—the blower, by regulating the amount of material entering the cylinder, makes single strength or double strength or heavier glass as desired.



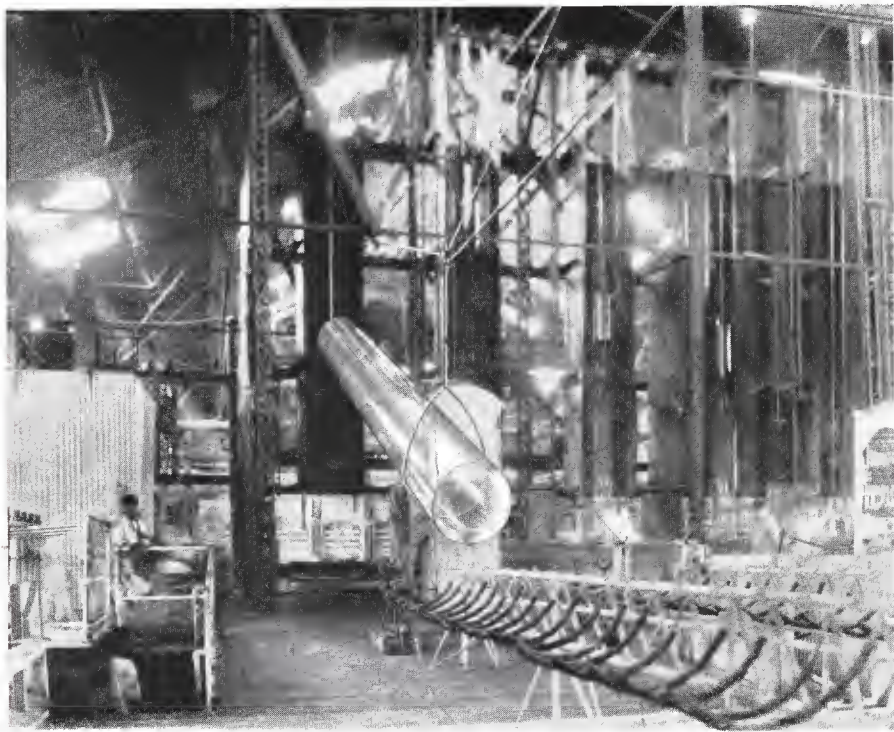
Starting the blowing process.



Blowing glass by machine process. Cylinders shown here are approximately 40 feet long.

MACHINE PROCESS—The blowing machine accomplishes the same result by purely mechanical process—the intricate working of the mechanism, the supply of molten glass, the air pressure, rapidity of action, making single or double thickness, being controlled by a single operator who appears to have supernatural powers, surely never dreamed of throughout the great stretch of years when the glass-blower was master of the art and accredited with inimitable skill.

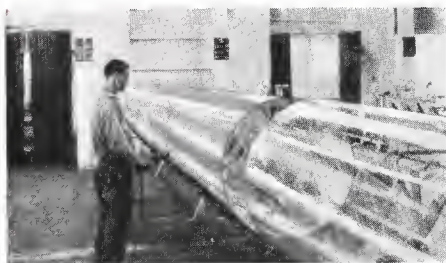
INGREDIENTS—The ingredients are practically the same in window glass as in plate glass—it is wholly a matter of refinement and process which produces the different kinds of material. The cylinder is decapitated at both ends by an ingenious method of spinning a string of hot glass at the proper



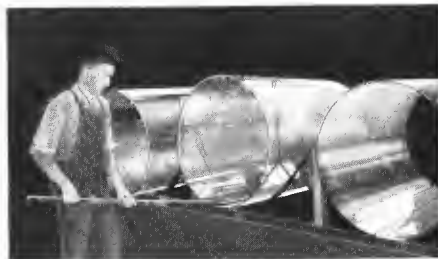
Lowering cylinder after completion of blowing.

place, or by the use of a wire wrapped around the glass and electrically heated which causes the cap and crown to break off clean. The cylinder is then split lengthwise.

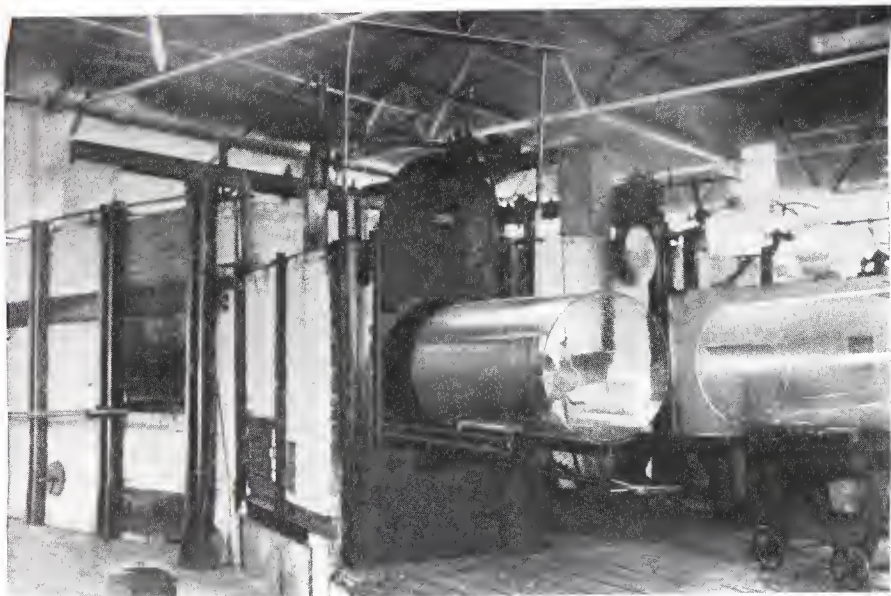
FLATTENING—After the cylinders are divided and split they are placed in the flattening oven on a large circular stone, and as the heat is increased and as the glass begins to wilt it is quickly smoothed out to the shape of the flat stone, upon which it rests. After being flattened the glass is worked in an acid bath to wash off all dirt and foreign matter in preparation for cutting.



Dividing large cylinder.



Splitting divided cylinders.



Cylinder entering flattening oven after being cut and split.

BOW—Cylinder glass cannot be perfectly flattened, and the waviness and bow or slight curve will always occur in this process.

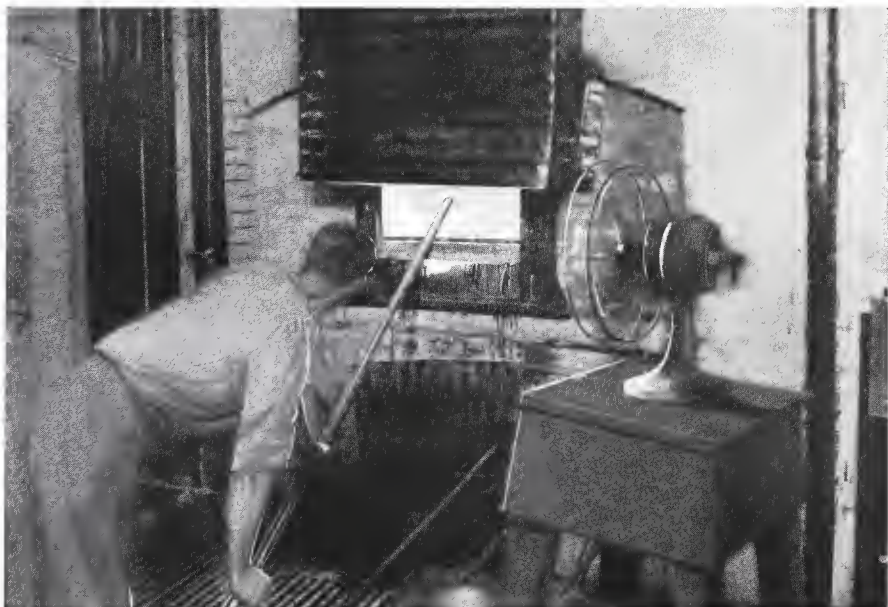
GLAZING—In glazing—the bend or bow should be glazed outward in the sash—the bulge towards the exterior.

SIZES DOUBLE STRENGTH—Window glass in double strength, or heavier is made as large as 30" x 90" or 38" x 86" or 48" x 80" and such extreme sizes containing twenty-five square feet, but it is inadvisable to use such glass in these measurements on account of the liability of breakage and the distorted vision due to waves, etc.

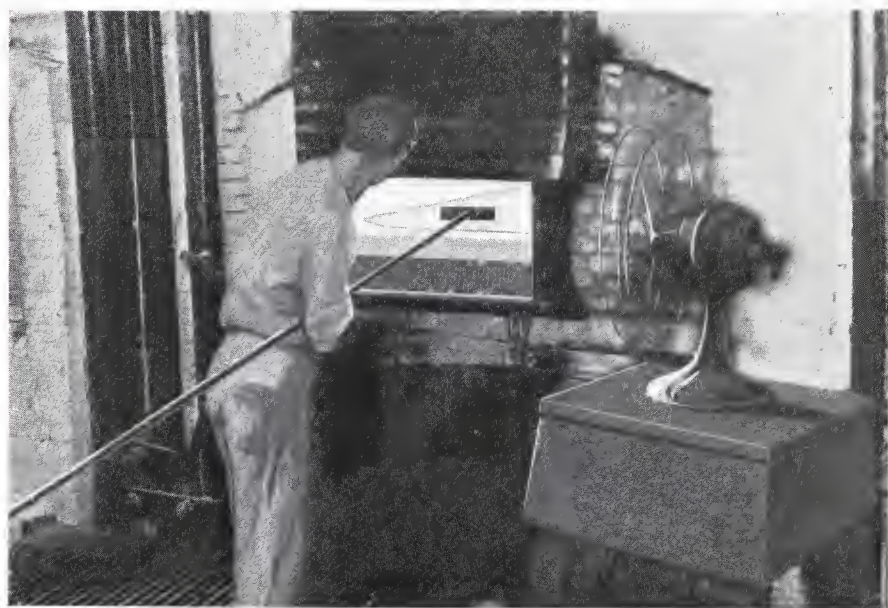
SIZES SINGLE STRENGTH—The same may be said of the extreme sizes of single strength which can be made up to 24" x 60" or 30" x 54" or 36" x 50" in sizes containing ten to twelve and one-half square feet.

PRICE LIST—Our current Window Glass List gives full information regarding bracket sizes, list prices of all qualities and sizes in both single and double strength, in factory box lot, or by the light, and designates the number of lights per box in each size.

CRYSTAL SHEET GLASS—A heavy blown glass, made by the same process as ordinary window glass and subject to the same inherent defects. Graded in "AA," "A" or "B" quality and made in various thicknesses: 26 ounce, 29 ounce, 32 to 34 ounce, and 39 ounce ($\frac{3}{16}$ " thick).



Flattening the split cylinder.



Ironing flattened cylinder of window glass.



Cutting window glass.

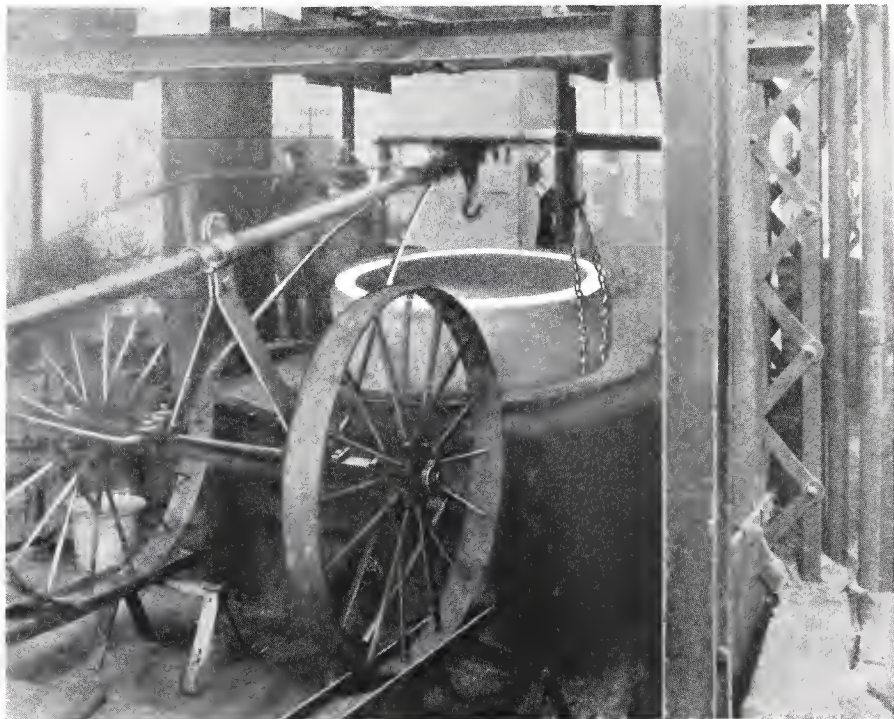
In examining samples of small size for inspection of quality, it should be remembered that the large light of glass will show the natural waves and defects, while the small piece may appear nearly perfect.

It is not altogether a matter of judgment to determine the various grades and certain rules may be accepted governing window glass specifications.

THICKNESS AND WEIGHT—Single strength measures approximately twelve lights to the inch, but a small variation either way is permissible. Single strength weighs approximately 16 to 18 ounces to the square foot. Double strength measures approximately nine lights to the inch. The thickness should be fairly uniform and the weight approximately 22 to 24 ounces to the square foot.

FACTORY PACKAGES—Window glass is packed in regular sizes approximately 50 square feet to the box up to the 100 united inch bracket (adding width and length), and 100 square feet to the box in sizes over 100 united inches. *Export cases usually are packed 100 feet per case.*

DOMESTIC SHIPPING WEIGHTS—Single strength in factory packages weighs from 65 to 75 pounds to the box. Double strength in factory packages weighs from 85 to 110 pounds to the box, 50 feet boxes.



Setting pot for machine blowing.

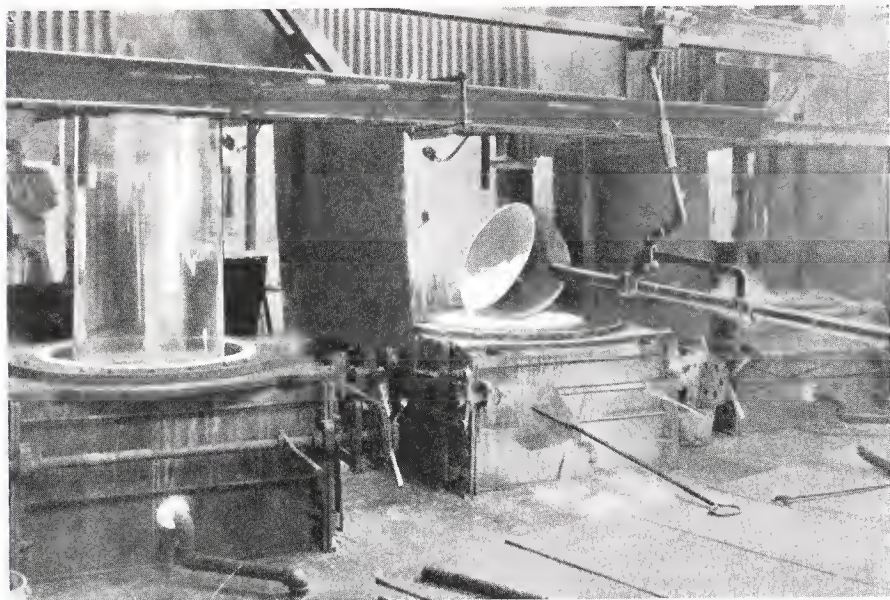
Double strength in 100 feet cases weighs approximately 200 pounds (shipping weight).

EXPORT SHIPPING WEIGHTS—Single thick, per 100 feet, 145 to 155 lbs. per case; double thick, per 100 feet, 190 to 215 lbs. per case.

“AA” OR FIRST QUALITY—“AA” quality should be clear glass, free from any perceptible amount of air bubbles or blisters, burnt specks or burns, cords and strings. It should have a good gloss and an even surface and be well flattened. By air bubbles it is understood that tiny blisters, or imperfections not perceptible on the cutter’s table, but detectable when placing sheet directly towards the light, would not be objectionable. This should be a careful selection in both single and double and should represent the very best than can be produced in window glass by the present methods.

“A” OR SECOND QUALITY—“A” glass is the normal selection of glass when no special selection is desired or specified and it admits of such defects as small strings or lines, small blisters when not too close to one another or located in the center of the sheet. Well flattened, the surface even, devoid of noticeable scratches, cropper marks, burns and other prominent defects.

STANDARD SPECIFICATION—“A” glass should be generally specified for building requirements when a good grade of window glass is wanted.



Pouring molten glass for machine blowing.

“B” OR THIRD QUALITY—“B” glass covers a wider range than either “AA” quality or “A” quality. It permits many of the defects inherent to the process of making such as waves, strings, lines, blisters, scratches, burns and other similar or equivalent defects. This quality generally embraces everything below “A” quality, not stony or full of blisters or other large defects objectionable for any common purpose, such as heavy scratches, heavy blisters, cords and sulphur stains. “B” quality is generally used in mills, factories, inexpensive dwellings, etc.

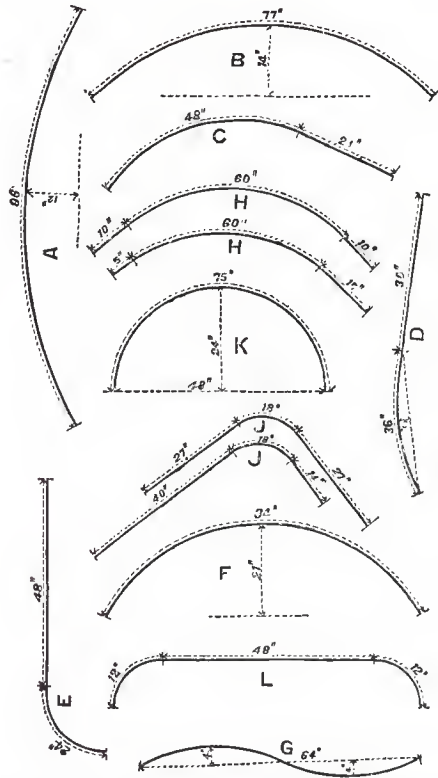
FOURTH QUALITY—To meet a demand for a quality of glass popular in certain countries, a selection of glass known as fourth quality is packed in cases usually containing 100 square feet.

26 OZ. CRYSTAL SHEET—A cylinder or blown glass heavier than the ordinary Double Strength, and graded by the same rules as window glass in first, second or third quality, measuring approximately $\frac{1}{8}$ " in thickness (technically $\frac{1.25}{1000}$ of an inch).

29 OZ. CRYSTAL SHEET—A heavier blown cylinder glass, graded as above, (technically $\frac{1.35}{1000}$ of an inch in thickness.)

34 OZ. CRYSTAL SHEET—A heavier blown cylinder glass, graded as above, (technically $\frac{1.59}{1000}$ of an inch in thickness.)

3/16" OR 39 OZ. CRYSTAL SHEET—A heavier blown cylinder glass, graded as above, measuring $\frac{3}{16}$ " in thickness.



See opposite
page for
explanation.

“Lighthouse” Quality Bent Glass

LENDS TONE—Bent glass is artistic and attractive, and lends tone to the structure or building.

SPECIAL FURNACES—Glass bending requires special furnaces, constructed similar to those used for annealing purposes, in plate and window glass factories.

BENDING—The bending is done by placing a flat sheet of manufactured glass in a mould, made to fit the shape or radius wanted, and subjecting it to a temperature sufficient to allow the glass to soften and fall to the shape of the mould.

ANNEALING—It is then annealed, by careful process, the same as in the manufacture of plate and window glass.

SIZES—The most popular sizes of polished plate glass, used in bent store-fronts, are $56\frac{1}{2}'' \times 96''$, up to $120''$ or longer, bent to quarter circle, on $36\frac{3}{8}''$ radius. Frequently there are calls for larger sizes, which can be bent as large as $140''$ wide \times $120''$ high—to quarter circle, or part of width or bend made to a regular radius and balance straight.

ALL KINDS OF GLASS CAN BE BENT—Such as polished plate, window glass, rough, and ribbed, plain and $\frac{1}{4}''$ wire glass. Also “Lighthouse-Opal” in all thicknesses for wainscoting and curved floor cases. The shapes are shown in accompanying drawings.



Explanation of Curves and Diagrams

Shown on opposite page

A—Curves are those which are bent to a given radius one way of the pane only, which applies to the whole length or width of the pane, and not to one part only. The depth of bend not to exceed one-eighth of the length of the bent side of pane. Example, length of the bent side of pane, 96'', depth of bend not above 12''.

B—Curves are those which are bent more than one-eighth, but not to exceed the quarter of a circle, or about 1 in 5½. Example, pane 77'', bend 14''.

C—For the same curve as B, but a part flat, the flat part not to exceed one-third. Example, pane 72'', bend 48'', flat 24''.

D—For flat curves, with one part flat, the depth of the bent part not to exceed 1 in 12, and the flat part one-half. Example, pane 72'', bend 36'', depth 3'', flat 36''.

E—For curves, the bent part not less than a 6'' radius, and not to exceed the quarter of a circle, with flat part, the flat part to exceed one-third but not to exceed two-thirds. Example, pane 72'', bend 24'', flat 48''.

F—Curves are those which are bent beyond the quarter of the circle, but not to exceed 1 in 4. Example, pane 84'', depth 21''.

G—For OG curves, depth not to exceed 1 in 16. Example, pane 64'', depth 4''.

H—For angular curves, viz:—Flat parts on each side, the centers not to exceed a quarter of a circle, the end flat parts one-fourth of the sides bent. Example, pane 80'', bend 60'', flat 10'', each side, or about 5 one side and 15 on the other.

J—For angle curves (radius not less than 6'') the center not to exceed the quarter circle, and the flat to exceed one-fourth, but not to exceed three-fourths. Example, pane 72'', bend 18'', flat 27'' each side or about 14'' on one side and 40'' on the other.

K—Curves are those which are bent beyond 1 in 4 but not to exceed the half circle (diameter not less than 12''). Example, pane 75'', depth about 24''.

L—Curves not to exceed the quarter of a circle at each side (depth of bend not less than 6''), the bent part not less than one-third, and the flat not more than two-thirds. Example, pane 72'', bend 12'' each side, center flat 48''.

Specify width (measurement around curve) first, and then the height. Preferably submit pattern or template of sweep in all cases.



“Lighthouse” Quality Window Glass Specialties



Convex Ovals

Made of Single Thick Window Glass. Manufactured in two grades “A” and “B.”

SIZES—

11 x 14—50 lights per box			
12 x 20—30	“	“	“
14 x 17—30	“	“	“
14 x 20—30	“	“	“
16 x 20—25	“	“	“

Convex Circles

For lamps and headlights and similar uses. Produced in a variety of sizes in both single and double thickness in accordance with requirements.

Picture Glass

Special selection—“AA” or First Quality. Each light labeled—paper packed.

“A” or Second Quality—Paper between each light.

“B” or Third Quality—Packed in 50 and 100 feet packages.



Fluted Glass

Produced by the human blown process as described on page 55, with the variation that when the molten metal is gathered on the end of the blow pipe it is placed in a copper mould with corrugations which makes an imprint on the molten metal. The remainder of the process is the same as the manufacture of clear window glass. Maximum size, about 36 x 50”.



“Lighthouse” Quality Photo Dry Plate Glass

Produced in First Quality, 14 to 16 lights to the inch—especially well packed in 100 feet cases. The most popular and recognized sizes are

5 x 7	6 x 8	$6\frac{1}{2}$ x $9\frac{1}{2}$	7 x 10
$5\frac{1}{2}$ x 8	$6\frac{1}{2}$ x $8\frac{1}{2}$	$6\frac{1}{2}$ x 11	8 x 10

Lantern Slide Glass

Manufactured in First Quality only and in three sizes.

$3\frac{1}{4}$ x 4	4 x $6\frac{1}{2}$	$6\frac{1}{2}$ x 8
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Average, 18 to 20 lights per inch. Carefully packed in 100 feet cases.

X-Ray Glass

Selected Quality

Produced in one quality only weighing about 16 ounces to the square foot with a slight variation in thickness. Packed carefully in 100 feet cases. The three standard sizes are

10 x 12	11 x 14	14 x 17
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HIRES TURNER



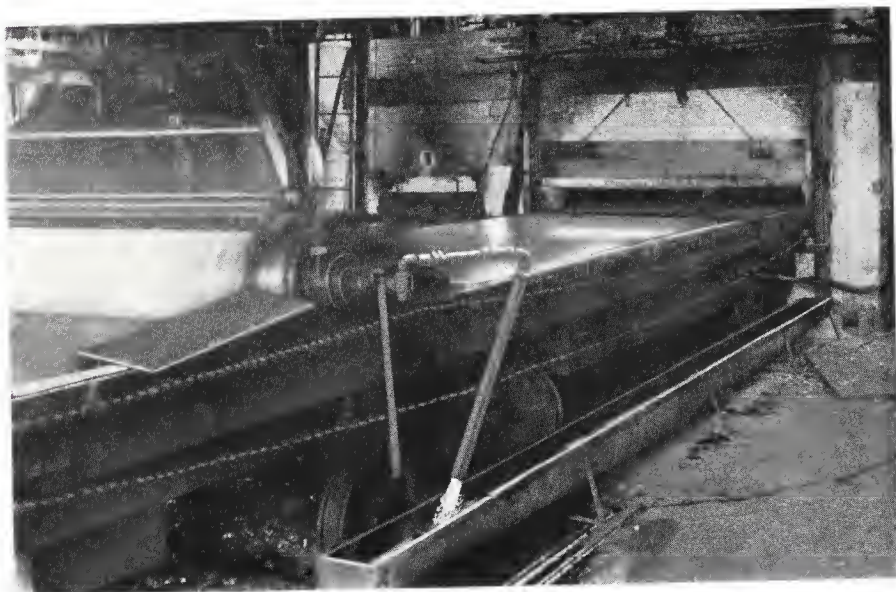
GLASS COMPANY



“Lighthouse” Quality

“SOLID”
WIRE GLASS

Pages sixty-nine to ninety-one



Showing sheet of wire glass on casting table just after roller has passed over the molten glass.

“Lighthouse” Quality “Solid” Wire Glass

With the exception of inserting the wire, the processes of manufacturing solid wire glass and plate glass are somewhat the same.

Process of Manufacturing Wire Glass

“SOLID” PROCESS—There are two general methods for making wire glass. First, the Pennsylvania Continuous **“SOLID” PROCESS** which consists of rolling the wire into the plate of glass of full thickness, all in one continuous operation.

“SANDWICH” PROCESS—Second, the **“Sandwich” Process**, which consists of rolling two separate sheets of half the total thickness and pressing them together with the wire between.

“SOLID” PROCESS GREATLY SUPERIOR—In view of the impossibility of welding thoroughly two separate sheets of glass, the great superiority of the Pennsylvania Continuous **“SOLID” PROCESS** is clearly evident.



Ladle coming from tank with molten glass for casting wire glass.

What Break-Down Tests Have Showed and Proved

The results of break-down tests on "SOLID" PROCESS Wire Glass, in comparison with other makes, bear out the superiority claimed for this process of manufacture.

MOST EXHAUSTIVE TESTS EVER MADE—Probably, the most exhaustive tests ever made of the strength of wire glass were conducted at the instance of the Pennsylvania Railroad Company, by Mr. A. W. Kurz, Chief Engineer of The National Ventilating Company.

WHY "SOLID" WIRE GLASS WAS ADOPTED BY PENNSYLVANIA RAILROAD COMPANY—These experiments were to determine the glass best suited for use in the new terminal of the Pennsylvania Railroad Company in New York City. The summary of Mr. Kurz's findings is as follows:

"SOLID" PROCESS, $145\frac{1}{8}$ LBS.

"SANDWICH" PROCESS, $84\frac{2}{3}$ LBS.

Material tested, $\frac{1}{4}$ -inch wire glass.

Glass bought in open market.

Area of glass used, 12 x 20 inches.

Load concentrated in center of sheet.

"SOLID" Wire Glass, $145\frac{1}{8}$ lbs.

"Sandwich" Wire Glass, $84\frac{2}{3}$ lbs.

Figures represent breaking loads, and are the average for six tests for both types of glass.



Polished "solid" wire glass unexcelled for use in stairways, elevators, and shafts.

"SOLID" WIRE GLASS 70% STRONGER—In other words, the above test proved conclusively that Pennsylvania **"SOLID" PROCESS** Wire Glass has a weight bearing strength 70 per cent. in excess of the "Sandwich" type.

"Solid" Wire Glass Is

1. A FIRE RETARDANT—As manufactured by the Pennsylvania Continuous Process, **"SOLID"** Wire Glass has proven highly valuable to the individuals, firms, and corporations employing it in retarding and withstanding the encroachments of fire.

2. A SAFEGUARD TO HUMAN LIFE—Since **"SOLID"** Wire Glass, through its peculiar properties of construction does not splinter and fly apart in the manner common to plain glass when attacked by fire or assailed by the shock of a blow or explosion, it is a safeguard to human life.

3. AN IMPORTANT FACTOR IN BUILDING—**"SOLID"** Wire Glass makes practical the transmission of daylight from without to the interior of a building through roof and wall openings, while safeguarding against the dangers referred to above.



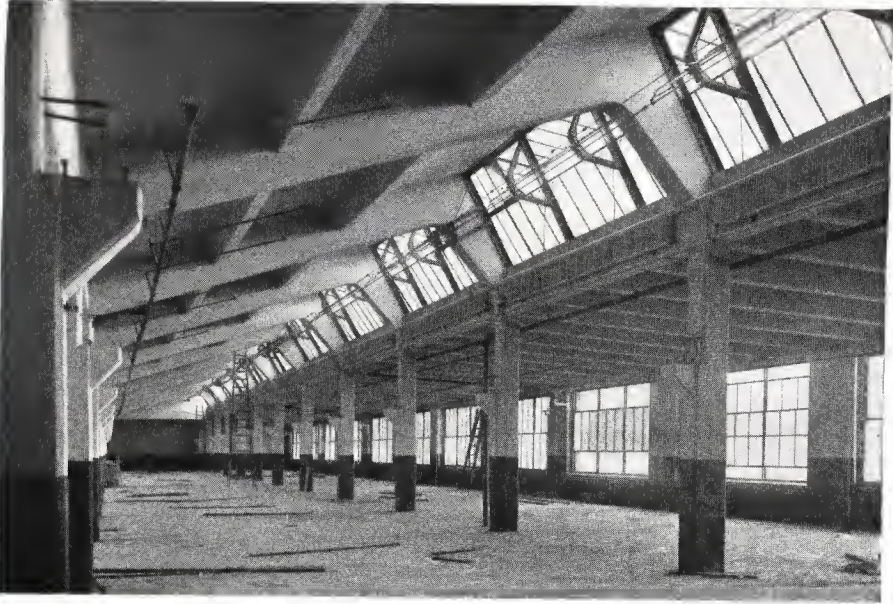
"Solid" wire glass used in marquise of Ritz-Carlton Hotel, Philadelphia, Pa.

4. AN IMPORTANT FACTOR IN REDUCING INSURANCE RATES—**"SOLID"** Wire Glass eliminates the charges on exposed openings by Fire Underwriters, and pays for its initial installation over and over again by the reduction which it effects in Insurance Rates.

Three Vital Recommendations

1. APPROVED BY NATIONAL BOARD OF FIRE UNDERWRITERS—**"SOLID"** Wire Glass, made by the Pennsylvania Continuous Process, is **APPROVED** by the National Board of Fire Underwriters. It meets with their every requirement for a fire retardant glass.

2. CONSIDERED "BEST" BY PENNSYLVANIA RAILROAD COMPANY—In a letter from the Pennsylvania Station, New York, N. Y., dated 2-14-13, and addressed to Mr. W. J. Harris, The American Export Sales Company, 82-92 Beaver St., New York City, Mr. A. W. Reynolds, General Foreman, Pennsylvania Railroad, said: *"In answer to your personal request for information concerning the quality of wire glass used by our Company, would state that we have used different grades of wire glass and find that the Penna. Wire Glass is the best. This we have tried out on our main roof at this station, and after three years of service we find that the glass installed has not cracked unless from extraneous impact. Penna. Wire Glass people make*



"Solid" wire glass used in side-walls and skylights of modern factory construction.

another wire glass known as 'Cobweb' glass . . . Penna. Wire Glass was used at various points along the system, giving entire satisfaction."

3. APPEAL MADE BY PROMINENT NEW YORK PHYSICIAN—Royal S. Copeland, A.M., M.D., New York City, said: *"It is probable that my experience is paralleled by that of every practitioner, but I am more and more impressed with the terrifying number of deaths and serious injuries due to the dagger cuts of shattered window panes. Railroad cars, street cars, subway cars, taxicabs, omnibuses, and every other carrier known to man are instruments of danger from this common cause. Not a day passes but the public print records an accident of this sort, and never a year goes by but each of us is called to treat the victim of such a disaster."*

How to Specify

DON'T BE CONFUSING—From some specifications it is difficult to the Glass Contractor to understand exactly what type of glass is desired. For example, specifications have been known to call for plain "Wire Glass" with the intention of getting a specific style of "Wire Glass."

HOW TROUBLE AND EXPENSE ARE CAUSED—In one case "Polished" Wire Glass was wanted, but the dealer, thinking "Rough" Wire Glass to be about the plainest and among the least expensive, figured on this style and furnished it. Thus due to the improper term used in specification considerable trouble and needless expense were caused.



*Turk's Head Building, Providence, Rhode Island.
Elevator enclosures glazed with polished "solid" wire glass made by the Pennsylvania continuous process.*

NAME THE EXACT SURFACE YOU WANT—Be sure to specify the exact surface you wish in calling for wire glass. Do not generalize by saying plain wire glass, or plate wire glass. If you want "Rough" Wire Glass, say "Rough" Wire Glass. If you want "Ribbed" Wire Glass, say so. If you want "Figured" Wire Glass, specify "Cobweb" or any other design which we may offer. If you want "Polished" Wire Glass, which gives entire clearness of vision, specify "Polished" Wire Glass.

*After specifying the surface desired, then specify
"Lighthouse" quality "SOLID" Wire Glass, made
by The Pennsylvania Continuous Process*

STYLES SUGGESTED FOR

Skylights— $\frac{1}{4}$ -inch Corrugated.
 Skylights— $\frac{1}{4}$ -inch, or $\frac{3}{8}$ -inch "Ribbed," "Rough," or "Aqueduct."
 Windows— $\frac{1}{4}$ -inch "Polished," "Ribbed," "Rough," or "Cobweb."
 Doors— $\frac{1}{4}$ -inch "Cobweb," "Rough," or "Polished."
 Partitions— $\frac{1}{8}$ -inch, $\frac{3}{16}$ -inch, or $\frac{1}{4}$ -inch "Cobweb."
 Transoms— $\frac{1}{8}$ -inch "Rough," or "Cobweb."
 Elevators— $\frac{1}{4}$ -inch "Polished," "Rough," or "Cobweb."
 Diffusion of Light— $\frac{1}{4}$ -inch "Ribbed," "Cobweb," and "Aqueduct."
 Sidewalls— $\frac{1}{4}$ -inch Corrugated.



"Solid" wire glass used exclusively in monitor construction of up-to-date factories reduces fire hazard and breakage.

OBSERVE RULES AND REGULATIONS—For Stairways, Corridors, Vestibules, Fire Escapes, and like cut-offs, observe the Rules and Regulations of the National Board of Fire Underwriters, and **INSIST UPON "SOLID" WIRE GLASS, MADE BY THE PENNSYLVANIA CONTINUOUS PROCESS.**

NOTHING THINNER THAN $\frac{1}{4}$ INCH PERMISSIBLE FOR FIRE PROTECTION—"Solid" Wire Glass is furnished in sheets up to 60 inches wide by 130 inches long, and up to 144 inches long but in lesser widths, and in several thicknesses, from $\frac{1}{8}$ -inch up, but, **KINDLY BEAR IN MIND THAT NOTHING THINNER THAN $\frac{1}{4}$ -INCH IS PERMISSIBLE FOR PURPOSES OF FIRE PROTECTION.**

WHERE YOU CAN GET RULES AND REGULATIONS—It is necessary to follow certain Rules and Regulations in making fireproof windows and construction. These are printed by the National Fire Protective Association. A copy may be secured by writing to the Underwriters' Laboratory, Chicago, Ill.



*"Solid" wire glass installed in newest building
operations of Victor Talking Machine Co.,
Camden, N. J.*

*Extract from Rules and Requirements of the National Board of
Fire Underwriters, Edition of 1906*

Thickness of Glass: Wire glass to have a thickness of at least $\frac{1}{4}$ of an inch at the thinnest point.

Size of Glass: The unsupported surface of the glass allowed, shall be governed by the severity of exposure and be determined in each case by the Underwriters having jurisdiction, but in no case shall it be more than 48 inches in either dimension or exceed 720 square inches.

WINDOWS, DOORS, AND PARTITIONS NOT TO EXCEED 120 SQUARE INCHES—Windows, doors, and partitions should be specified for such sizes as 15" x 48", 18" x 40", 20" x 36", and 24" x 30" to conform to the above rule where dimensions are not to exceed 720 square inches.

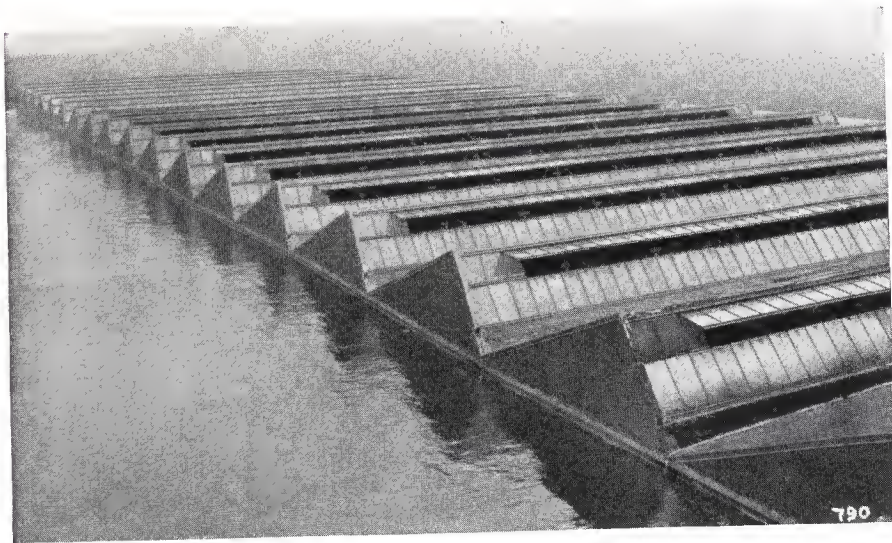
DEPTH OF RABBIT, AND STYLE OF METAL FRAMES AND SASH—There are also restrictions and regulations governing the depth rabbit, ($\frac{3}{4}$ " deep), bearing glass, ($\frac{5}{8}$ "), and the style of metal frames and sash to meet the demands of fire retardant construction, and to permit glazing.

HAVE YOUR PLANS READY EARLY—Glass being one of the last materials to go into a building, it is very often the case that plans are not in proper shape for the glass contractor to take off sizes sufficiently in advance to enable him to place his order far enough ahead to give the manufacturer time to cut the glass to sizes and make shipment in time to enclose the building by the date desired.



"Solid" wire glass for garages.

GIVE CONSIDERATION—It is therefore advisable to give the foregoing point consideration in due time in order to facilitate matters and assure glazing being done on time, as in many cases the delay is not the fault of the contractor, or the manufacturer.



Installation of "solid" wire glass in sawtooth construction of modern factory.



*Letter Recommending Solid Wire Glass Made by
the Pennsylvania Continuous Process*

The Central Railroad Company of New Jersey.

Office of the Chief Engineer.

JOS. O. OSGOOD
Chief Engineer

Central Building—143 Liberty Street.

A. E. OWEN
Prin. Asst. Eng.

New York, N. Y., February 14, 1913.

In your reply please refer to File No.

Subject :

8171

Mr. W. J. Harris,

The American Export Sales Co.,

82-92 Beaver Street,

New York City.

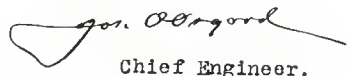
RECEIVED
FEB. 17 1913

Dear Sir:-

In reply to your inquiry of the 13th instant on the subject of wire glass: I would say that we have for some time past preferred the wire glass furnished by the Pennsylvania Wire Glass Company and have recently arranged to use it on a large train shed we are putting up at Jersey City.

We have had a good deal of trouble in former years with wire glass but have had very satisfactory results with the Pennsylvania wire glass in recent years.

Yours truly,


Chief Engineer.

O+HB



"Lighthouse" Quality "Aqueduct" Wire Glass

The Ideal Skylight Glass

PREVENTS DRIPPING OF CONDENSATION—One of the principal difficulties in the way of satisfactory skylight service is the dripping of condensation from the under side of the glass. In some instances a moderate amount of drip does not matter greatly, but in others, a single drop on the goods being made or stored below spells serious damage or absolute ruin. If kept comparatively clean, "AQUEDUCT" Wire Glass positively does away with this hazard.

FLUTED SURFACE TAKES ADVANTAGE OF CAPILLARY ATTRACTION—

The reason "Aqueduct" Wire Glass does away with dripping is because it has a fluted surface on its under side. The channels are of such size and form as to take greatest advantage of what is known as "capillary attraction." When set at an angle of 10 degrees or more, and kept reasonably clean, "Aqueduct" Wire Glass will carry off all condensation.

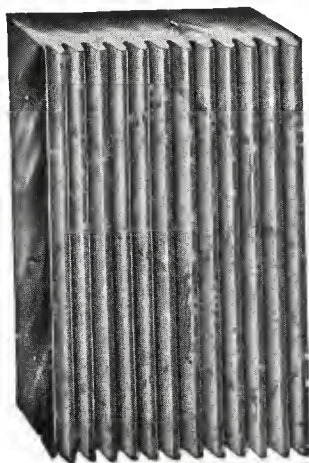
- It has a full $\frac{1}{4}$ -inch body with many supporting webs.
- It is a most brilliant light diffuser.
- It gives the greatest capillary attraction.
- It has a hard smooth weather surface.
- It cuts freely.

"Lighthouse" Quality "Cobweb" Wire Glass

The Ideal Light Diffuser

WIDESPREAD POPULARITY—"Cobweb" Wire Glass has now been on the market for several years, and because of its peculiarly valuable properties has grown into widespread popularity.

CHARM OF "COBWEB"—In "Cobweb", delicacy and stability are well and harmoniously combined. Its charm is its peculiar fitness, its fine fidelity in spirit and outline—its wholesome purpose, and its singular freedom from every suggestion of lifeless, machine-like duplication. The wire in it is scarcely noticeable a few feet distant.



Aqueduct



Cobweb

Made in $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ in. thicknesses.

**Transparent Polished Wire**

Made $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ in. thicknesses.

"Lighthouse" Quality "Polished"

Solid Wire Glass

UNOBSTRUCTED VISION FIRE-PROOF QUALITIES—Especially adapted for doors and windows where fire-retardant glass is required, and transparency needed. Permits unobstructed vision, yet preserves all the fire-proof qualities so essential to modern fire-proof structures.

THIS PRODUCT REPRESENTS HIGHEST TYPE OF MANUFACTURE—Cast as rough glass, and after careful selection to insure the most perfect sheets, is ground and polished on both sides. This product represents the highest type of manufacture in every respect. Particularly is this true of its light-transmitting and strength properties.

"Vuelux"

Semi-Polished Wire Glass

FOR USE WHERE PERFECT TRANSPARENCY IS NOT ESSENTIAL

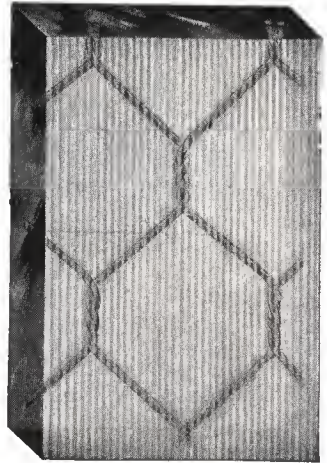
—For many purposes, perfect transparency is not essential, and for these we offer "VUELUX," a semi-polished wire glass. "Vuelux" has only one side ground and polished. It permits of well defined vision up to a distance of five to six feet.

**Rough**

Made in $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ in. thicknesses.

SUITABLE FOR ELEVATOR DOORS AND INTERIOR PARTITIONS—

"Vuelux" is perfectly suitable for use in elevator doors, interior partitions, etc. Its moderate price recommends it for the many purposes where the complete transparency of the "Polished" product is not required.

**Ribbed**

Made in $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ in. thicknesses.



“Lighthouse” Quality Corrugated Wire Glass

Advantages

DAYLIGHT—By the use of corrugated wire glass on side walls and roofs a *daylight building* is obtained without offensive shadows, glare or other objectionable features.

INEXPENSIVE—Corrugated wire glass is the best and least expensive form of construction for factories, warehouses and building where maximum amount of light is essential. It is easily and quickly erected and makes the most weather- and dust-proof construction of any materials on the market. Can be used by itself or in connection with corrugated iron. See details.

DIFFUSION OF LIGHT—By the special construction of corrugated wire glass the light rays are diffused and separated, thus *eliminating offensive shadows and glare*. This is a desirable feature in modern buildings.

HEAT RAYS—The heat rays are absorbed by corrugated wire glass more than by any other glass, thus making a building several degrees cooler in warm weather by its use.

SANITARY—On account of the smooth surface, dirt, dust and germs will not adhere to surface. Grease and other foreign matter are easily removed.

APPEARANCE — Buildings in which corrugated wire glass is installed have an attractive, modern, up-to-the-minute look outside of all other advantages.

SAFETY—It is one of the best fire retardants used in building construction.

WEIGHT—5 to 6 pounds per square foot when installed. Is lighter than any other building material with equal fire retardant qualities.

WIND PRESSURE—Withstands wind pressure much better than any other type of building glass.





“Lighthouse” Quality Corrugated Wire Glass

Standard Specifications

ROOFING—The roofing, where shown or marked on the plans, to consist of “Lighthouse” Quality Corrugated Wire Glass manufactured by the Pennsylvania Continuous Process. The sheets are to be laid on purlins protected by a strip of heavy asphalt roofing (or equal) so as to form a secure bed for glass to rest on. These strips to be put on so that glass rests evenly and is supported at all points where it comes in contact with purlins.

METHOD OF LAYING—Glass should not be set against building metal without placing asphalt roofing between. Lay glass edge to edge (not lapping) and allow a space $\frac{3}{8}$ of an inch between the sheets of glass. Cover joints with a 3" strip of asphalt roofing (or equal) and full length of sheet of glass painted on glass side with asphalt paint. Then cover with 3" No. 24 gauge galvanized iron or copper strips full length of glass. The main fasteners to be hooked to purlins with reinforcing clips with felt washers under same, placed on top of the cover strip and bolted and screwed to clamp down glass. Between the purlins or main fasteners put in intermediate fasteners every 10 or 12", consisting of stove bolt having galvanized iron and asphalt roofing washers next to glass securely screwed down. (Tighten bolts snug so as not to strain glass.)

HORIZONTAL LAPS—Where practicable, have laps of glass come over purlins. Lay a 2" strip of asphalt roofing (or equal) coated on both sides with asphalt paint full width after being pressed in corrugations of glass, and on this lay the second row of glass with a 2" lap over lower sheets.

SIDING—Glass on side walls will be supported on S shaped supports hooked over the lower sheets, the joints to be same as specified for roofing. When glass is set, supports may be removed. Care must be taken to see that the glass is properly lined up. Where it comes in contact with cross members of the building the sheets must rest firmly on all points before the main fasteners are screwed up.

Provide all necessary straps, bolts, washers, clips, asphalt paint, asphalt roofing, roofing felt, etc., necessary to make a water-tight and workmanlike job.

RIDGE ROLL—Provide (No. 20 gauge galvanized iron or 16-oz. copper 30" girth) ridge roll, securely bolted to purlins, all air spaces to be made water- and air-tight by filling in with roofer's cement.

CUTTING NOTES—When cutting sheets and figuring width of sheets required, same must be figured to have high part of corrugation on each side of sheet to make joint. Corrugations are $2\frac{11}{16}$ " apart.

SIZE— $26\frac{1}{2}$ " wide, only. Thickness $\frac{1}{4}$ " full. Standard sheet $26\frac{1}{2}$ " x 66". Lengths cut to any specification up to 132".



Interesting to Architects and Engineers

SIDING AND ROOFING—From an engineering standpoint Corrugated Wire Glass adapts itself admirably well for siding and roofing in buildings, weighing only $4\frac{3}{4}$ pounds per square foot of surface.

SIZE OF SHEETS—The sheets are furnished $26\frac{1}{2}$ " wide by 5'-6" long, therefore, roof purlins should be spaced 5'-4" e. to e., if I-beams, or back to back if channels, which allows 2" for lap at end joints; while the spacing of T-iron girts for siding should be 5'-6" e. to e., plus thickness of outstanding leg of supporting girt.

FIT CORRUGATED SHEET IRON AND ASBESTOS—The sheets are so corrugated that they readily fit and join to corrugated iron or asbestos corrugated sheets or protected metal, so that it is possible to use any amount of either material where required or desired without additional expense. This enables the Architect or Engineer to have maximum amount of lighting possible even to the extreme corners of buildings, where a foreman's office is required, and with ordinary construction impossible to obtain without considerable additional expense.

RIGID—As will be seen by details the glass is simply, rigidly and economically attached to the main superstructure in any position that the corrugated metals can be applied.

NO MONITOR CONSTRUCTION—By using ventilating sash on sides and ends of building, and through lighting obtained by the use of Corrugated Wire Glass roofing, expensive monitor skylight construction can be eliminated, retaining full advantages.

WITHSTANDS STRAINS—With a 5'-6" span the Corrugated Wire Glass will give sufficient resistance to withstand the strain brought about by the elements, both snow load and wind pressure, with proper factor of safety when used in maximum condition, namely, vertical on sides and flat on roofs.

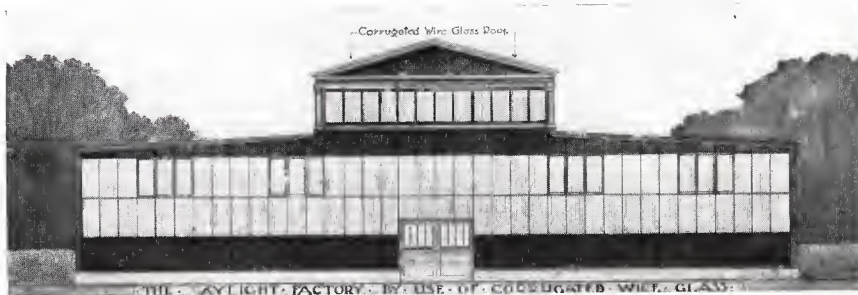
NO FRICTIONAL RESISTANCE—The glazed surface of the glass offers no frictional resistance, therefore, on pitched roofs the possibility of obtaining full snow load is reduced materially as the pitch of the roof increases; in fact (except in back of parapet walls) this load could not occur.

TESTS—The value of Corrugated Wire Glass was established by a series of loading and deflection tests made over 5'-6" spans. In these tests the sheets were tested to destruction, observation being made of deflections and action of the Corrugated Wire Glass under progressive loading.

73 POUNDS PER SQUARE FOOT—These tests sustained as high as 73 pounds per square foot ultimate load; deflection increased uniformly with increase of load, the wire mesh being entirely encased with glass, proving the uniformity of the manufacture of this material and establishing its merit as a fire retardant.

EXCEPTIONAL FLEXIBILITY—The deflections reached a maximum of $11/32$ inch or about $1/200$ of the span and recovered entirely a $1/4$ -inch deflection under 75% of the ultimate load when removed, thus proving the exceptional flexibility of this material.

COPIES—Copies of full details together with Consulting Engineer's report on results of these tests will be furnished on request.



In the above factory the side walls and roof of monitor are made of Corrugated Wire Glass.

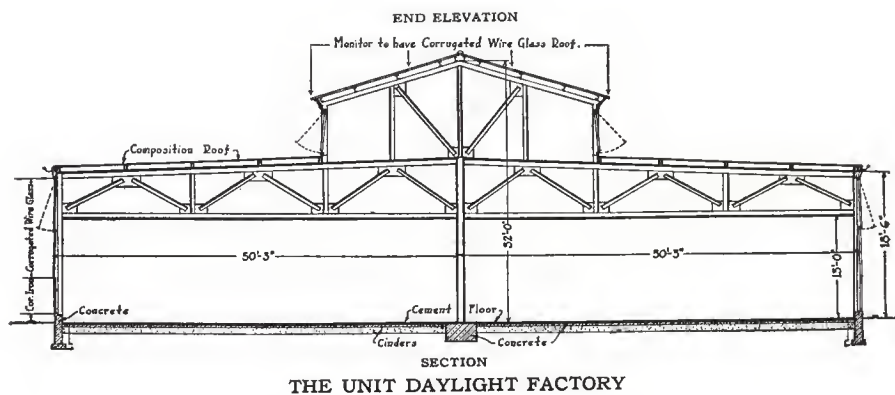
The Daylight Factory

An Advanced Idea in Factory Building Construction

Elimination of Shadows and Offensive Glare

Plans and Specifications

Our Engineering Department will be glad to assist architects and contractors in preparing plans, specifications and working drawings of a Unit Daylight Factory by the use of "Lighthouse" Quality Corrugated Wire Glass.



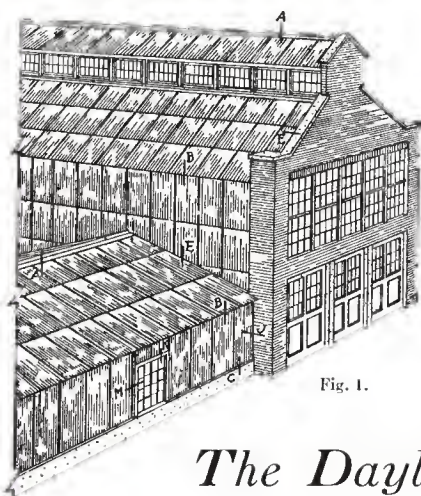


Fig. 1.

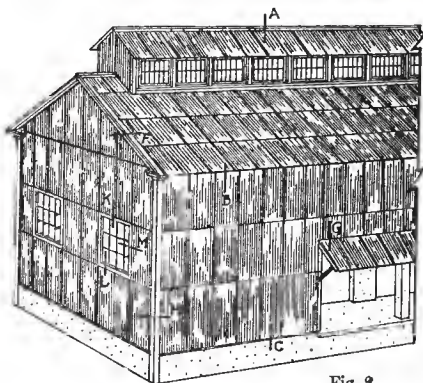


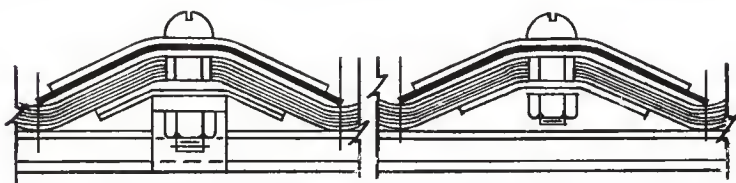
Fig. 2.

The Daylight Factory

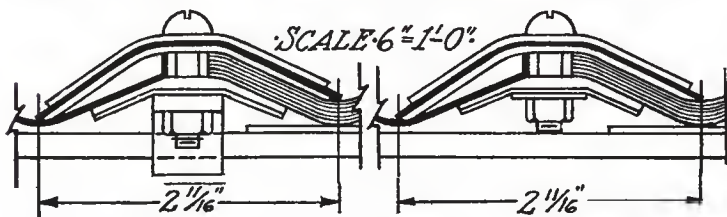
Perspectives Showing Uses of Corrugated Wire Glass

Fig. 1 shows typical factory building with brick end walls, Monitor roof, main roofs and siding, all of Corrugated Wire Glass.

Fig. 2 shows typical factory building in which Corrugated Wire Glass is used throughout, including hood over shipping platform, thus giving maximum amount of light. Steel sash need only be used for ventilating purposes.

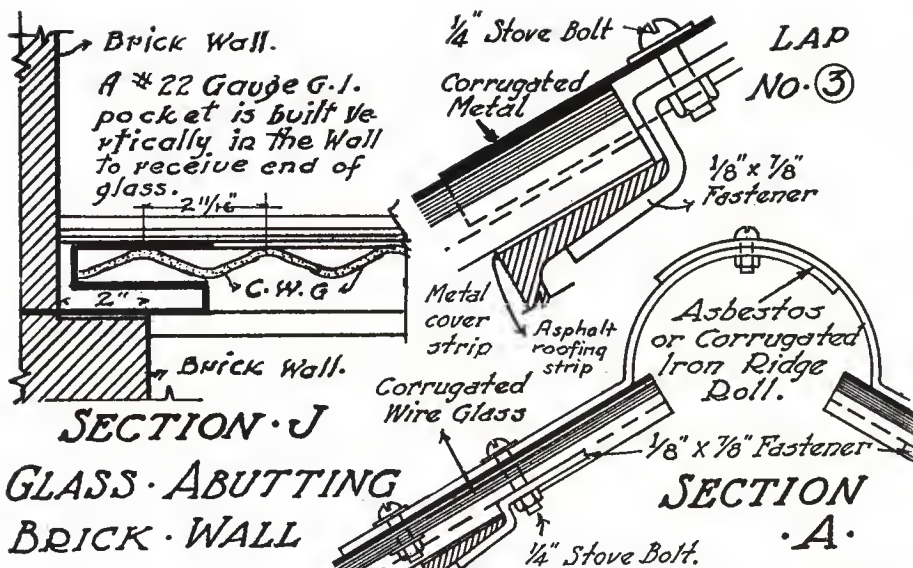


·SECT·SIDE·JOINT·GLASS·to·GLASS·



·SECT· CORR·METAL ·to·GLASS·

·BOLT·AT·PURLIN· INTERMEDIATE·BOLT·



LAPS ON ROOF.

Lap No. ① shows Corrugated Wire Glass lapping corrugated metal.

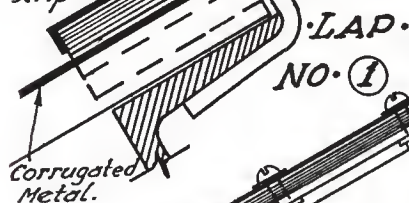
Lap No. ② shows Corrugated Wire Glass lapping Corrugated Wire Glass.

Lap No. ③ shows corrugated metal lapping Corrugated Wire Glass.

See Fig. X for cross section thru glass to metal joint.

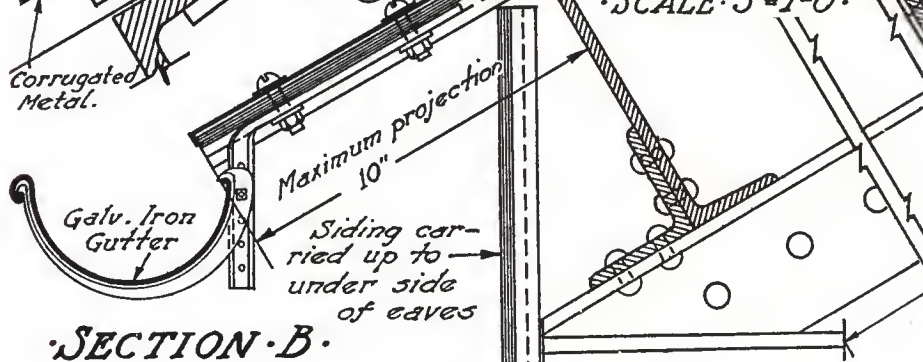
SCALE 6" = 1'-0"

Metal cover strip

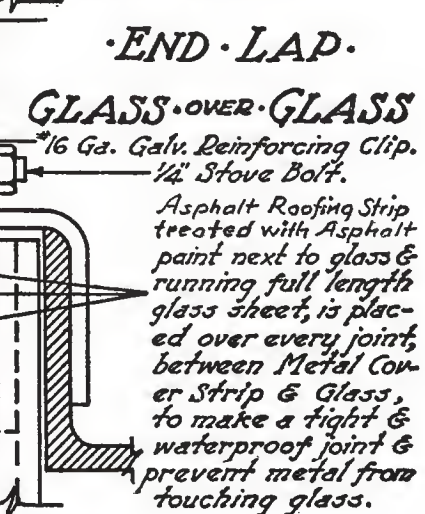
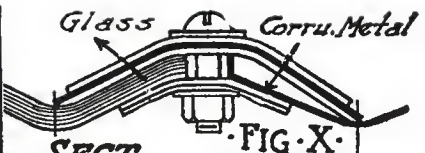
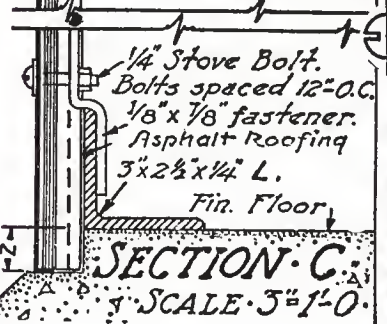
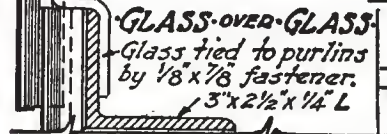
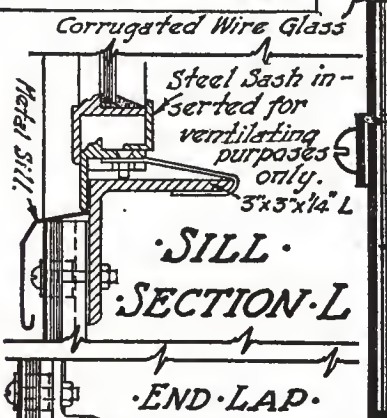
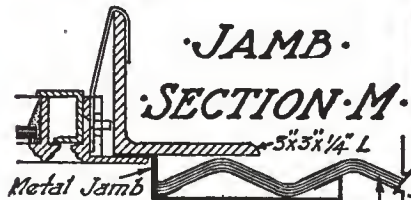
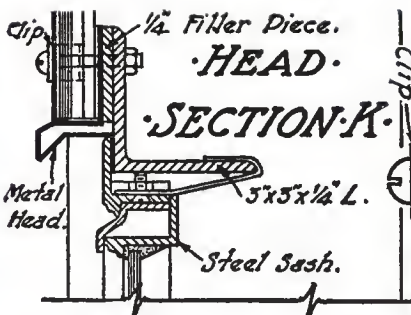


Glass Sheets 26 1/2" x 5'-6"

SCALE 3" = 1'-0"

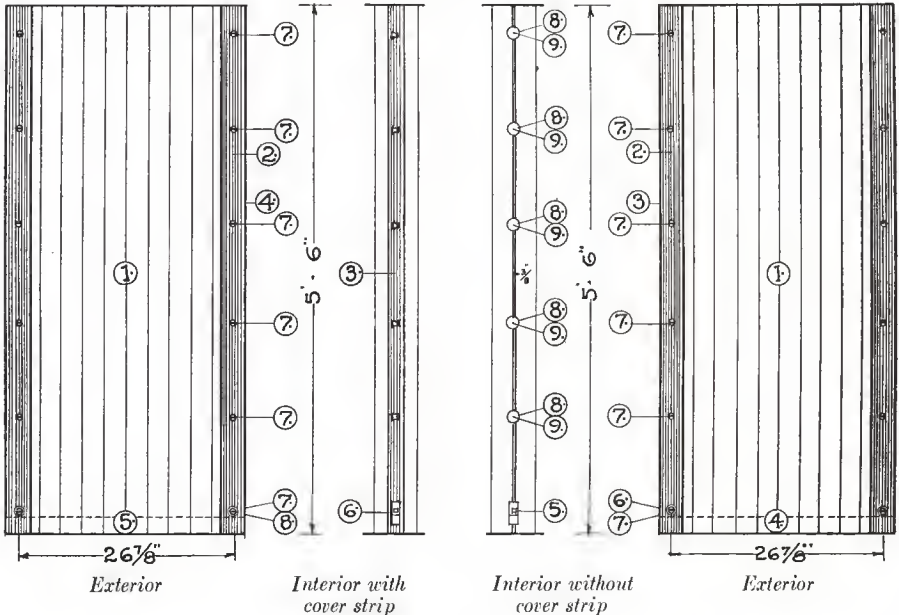


SECTION B.





Detail Showing Parts Required With and Without Inside Cover Strip



PARTS REQUIRED WITH INSIDE COVER STRIP

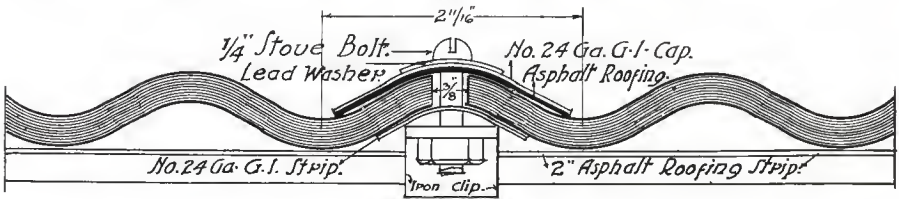
1. Corrugated Wire Glass Sheet
26 1/2" Wide, 5'6" Long
2. No. 24 Gauge G. I. Cap
2 1/8" Wide, 5'6" Long
3. No. 24 Gauge G. I. Inside Cover Strip
1 1/2" Wide, 5'6" Long
4. Asphalt roofing strip
2 3/4" Wide, 5'6" Long
5. Asphalt roofing Joint Strip
2" Wide, 2'6" Long
6. Iron Clip bent to shape 1/8" thick
7/8" Wide, 3 7/8" Long
7. Six 1/4" Stove Bolts.
8. Lead Washer

Asphalt paint on all Asphalt strips

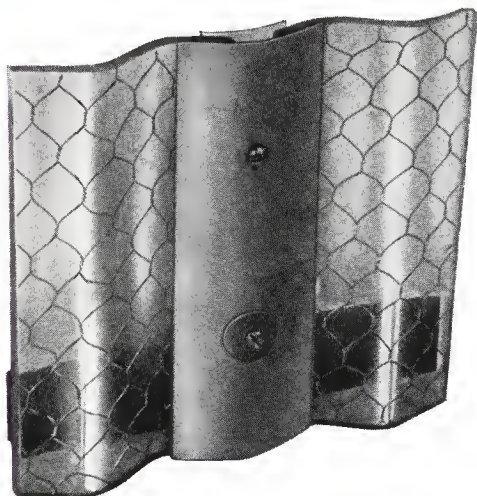
PARTS REQUIRED WITHOUT INSIDE COVER STRIP

1. Corrugated Wire Glass Sheet
26 1/2" Wide 5'6" Long
2. No. 24 Gauge G. I. Cap
2 1/8" Wide, 5'6" Long
3. Asphalt roofing strip
2 3/4" Wide, 5'6" Long
4. Asphalt roofing Joint Strip
2" Wide, 2'6" Long
5. Iron clip bent to shape 1/8" thick
7/8" Wide, 3 7/8" Long
6. Lead Washers
7. Six 1/4" Stove Bolts
8. Tin Washers (5)
9. Asphalt Washers (5)

Asphalt paint on all Asphalt strips



Detail Showing Glass Joint



Exterior view, showing galvanized iron cover strip.

How Corrugated Wire Glass is Joined

A space $\frac{3}{8}$ " is left between each sheet of glass. This joint is covered with a $2\frac{3}{4}$ " strip of asphalt roofing, painted with asphalt paint on the side next to glass. On this is placed a galvanized iron cover cap. This cap is bolted down with a $1\frac{1}{8}$ " stove bolt, with lead washer where glass is fas-

tened to purlins and with a $1\frac{1}{8}$ " bolt at intermediate fastenings, approximately every 12".

A $1\frac{1}{2}$ " inner strip is placed over the $\frac{3}{8}$ " joint. The exterior cover cap and interior cover strip are bolted together with $\frac{1}{4}$ " stove bolts. The iron supporting clip shown occurs only where glass is attached to purlins.

AIR- AND WATER-TIGHT CONSTRUCTION—Thus an absolutely rigid, air- and water-tight construction is made.

EAVE JOINTS—When desirable to use Corrugated Wire in side walls directly up to the eaves a suitable moulding can be supplied to close up the openings where the corrugations do not fit perfectly. In most buildings where this type of glass is used, however, these openings are considered an advantage from the standpoint of ventilation.

FITTINGS CARRIED IN STOCK—The galvanized iron cover caps, galvanized iron inner strips, iron clips and asphalt roofing are carried in stock and will be furnished with glass if desired. All the rest of the material is ordinary stock goods.



Interior view, showing galvanized iron inner strip and iron clip with purlin.



Notice elimination of shadows.

Boiler House

Built of Corrugated Wire Glass

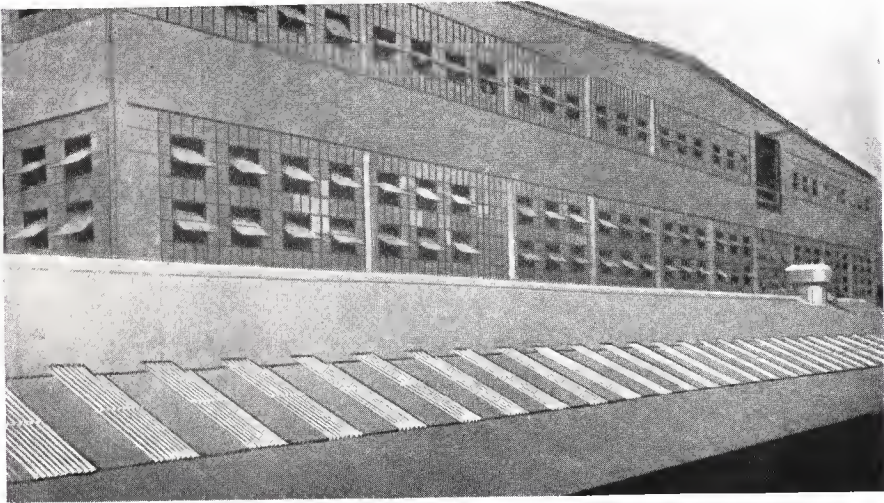


Perfect diffusion of light.

The wide variance in temperature between the outside and inside of boiler house in winter does not affect the glass in any manner whatsoever. Note perfect diffusion of light.



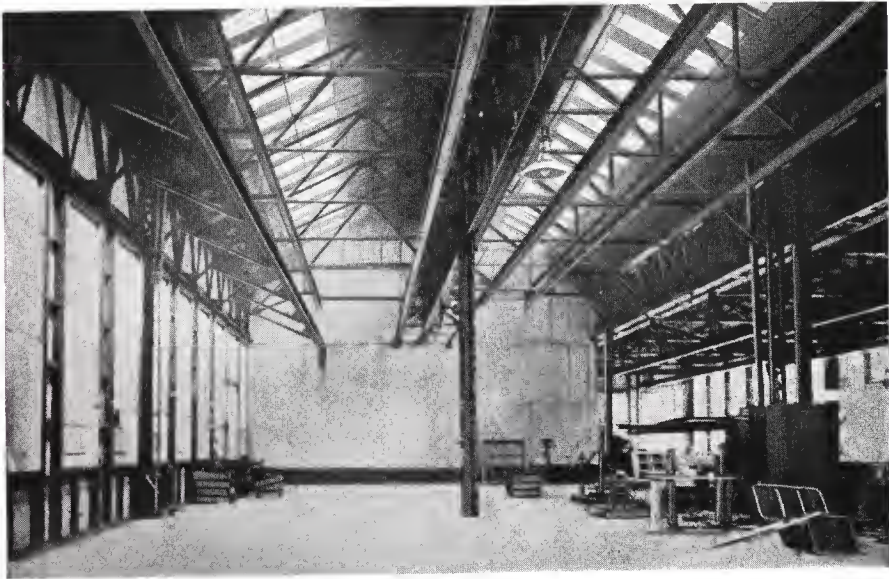
Exterior view of above building.



Note alternating insertions.

Corrugated Wire Glass

In the accompanying cuts Corrugated Wire Glass is shown as installed with other corrugated material. Note how it is alternated to provide adequate lighting throughout the entire building. The designers and builders of the structure illustrated state that Corrugated Wire Glass is the only material that could be used to meet their requirements with satisfaction.



Interior of building shown above. Note perfect diffusion of light.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

ROLLED
FIGURED GLASS

AND ALLIED PRODUCTS

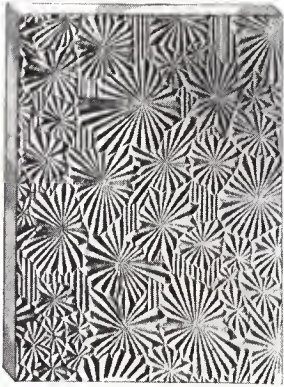
AUTOMOBILE HEADLIGHT DIMMERS,
MIRRORS AND TAIL-LIGHTS

Pages ninety-three to one hundred and five



“Lighthouse” Quality Rolled Figured Glass

The prime object of figured glass is to supply an obscure translucent glazing material with attractive pattern of depth and character, and at the same time to be essentially prismatic so as to admit, diffuse, and distribute the light.



Florentine

Sizes up to 48" wide and 132" long. Thicknesses, $\frac{1}{8}$ ", $\frac{3}{16}$ ".



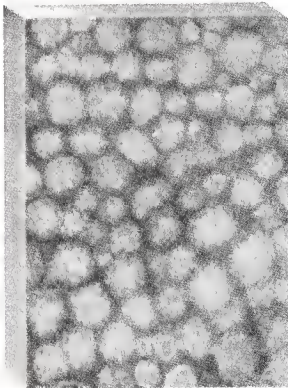
Moss

Sizes up to 48" wide and 132" long. Thicknesses, $\frac{1}{8}$ ", $\frac{3}{16}$ ".



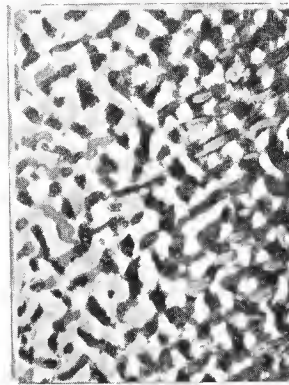
Mystic

Sizes up to 48" wide and 132" long. Thicknesses, $\frac{1}{8}$ ", $\frac{3}{16}$ ".



Hammered Cathedral

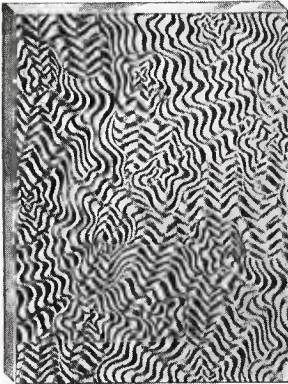
Sizes 30" wide and 90" long. Approximately $\frac{3}{32}$ " thick, correct for leading.



Rippled

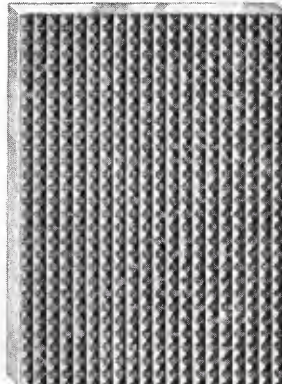
Sizes 30" wide and 90" long. Approximately $\frac{3}{32}$ " thick, correct for leading.

Stock Sheets, packed in cases containing 350 to 500 square feet.
Cut sizes, packed in cases containing not more than 300 square feet.



Colonial

Sizes up to 42" wide and 110" long. Thicknesses, $\frac{1}{8}$ " to $\frac{3}{16}$ ".



Pyramid Oriental

Sizes up to 48" wide and 132" long. Thickness, $\frac{1}{4}$ ".



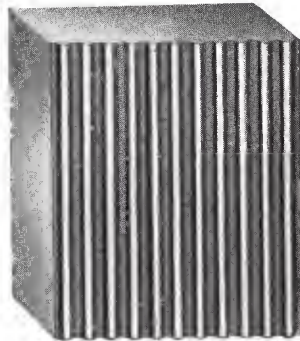
Cobweb

Sizes up to 54" wide and 120" long. Thicknesses, $\frac{1}{8}$ " and $\frac{3}{16}$ ".
 Sizes up to 60" wide and 120" long. Thicknesses $\frac{1}{4}$ " to $\frac{3}{8}$ ".



Rough

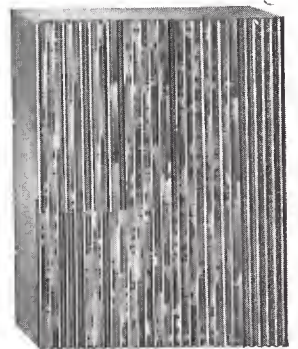
Sizes up to 48" wide and 132" long. Thicknesses, $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ " and 1".



***Aqueduct
Skylight Glass***

Adapted to conduct or lead away moisture throughout its entire length, even when glazed at a comparatively slight inclination, and so prevent moisture from dropping.

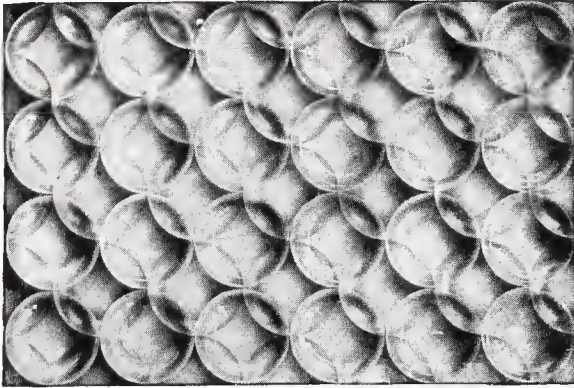
Sizes up to 54" x 120".
 Sizes up to 62" x 120".
 Thicknesses, $\frac{1}{4}$ " and $\frac{3}{8}$ ".



Ribbed

Sizes up to 48" wide and 132" long. Thicknesses, $\frac{1}{8}$ ", $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ ". Rib runs with length.

Stock Sheets, packed in cases containing 250 to 500 square feet in any regular even inch width.
 Cut Sizes, packed in cases containing not more than 300 square feet of $\frac{1}{8}$ " or $\frac{3}{16}$ " or 200 square feet of $\frac{1}{4}$ " and $\frac{3}{8}$ " and 100 square feet of $\frac{1}{2}$ " thick.

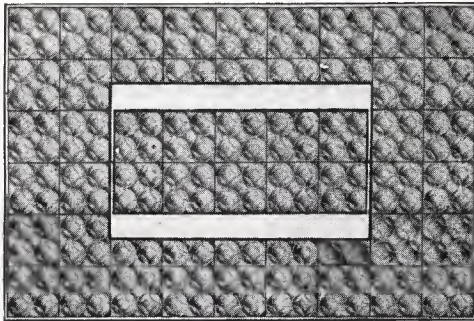


Appearance in sheet form.

Pressed Lens Glass *for Transom Sash*

1. A universal diffuser of light.
2. Takes the light at any angle and puts it where it is needed.
3. Does not clog up with dirt.
4. Easily cleaned.
5. Highly decorative.
6. Removes the glare of sunlight.
7. No shades are necessary.

SUPPLIED—Any widths up to 48" wide and 100" long.



Cut in squares and glazed in hard metal.

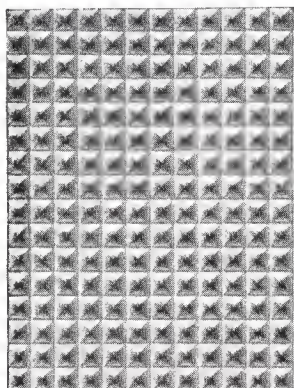


Prismatic Glass

Ornamental Polished Plate

One Side Ground and Polished

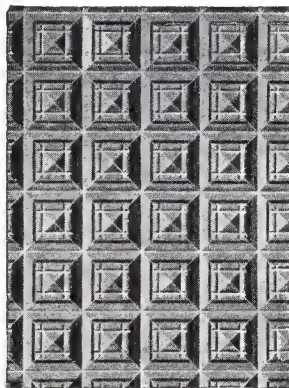
A beautiful product for partitions, door-lights, vestibule glazing, car or boat windows or ceiling lights, store or bank fixtures, or for street windows, where white light is wanted, with ornamental design.



O-1 "Imperial"

Semi-Obscure

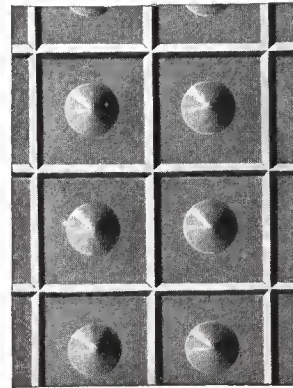
Made up to 70" wide and 82" long. About $\frac{1}{4}$ " thick.



O-2 "Imperial"

Semi-Obscure

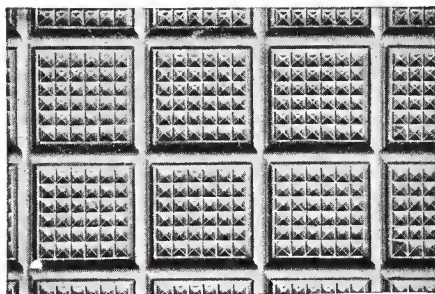
Made up to 70" wide and 82" long. About $\frac{1}{4}$ " thick.



O-3 "Imperial"

Transparent

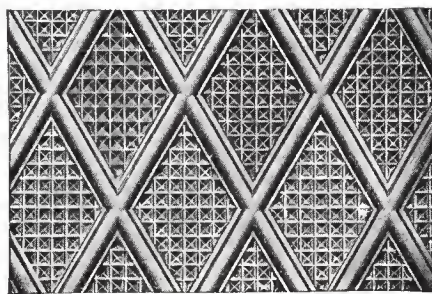
Made up to 70" wide and 82" long. About $\frac{1}{4}$ " thick.



"O-4 Imperial"

Semi-Obscure

Made up to 70" wide and 82" long. About $\frac{1}{4}$ " thick.



O-5 "Imperial"

Semi-Obscure

Made up to 70" wide and 82" long. About $\frac{1}{4}$ " thick.

After long observation and experience in connection with the use of Polished Plate Prismatic Figured Glass, we have selected the above designs as being best adapted for all general use where glass of this character is required, and recommend them to our patrons without reservation.

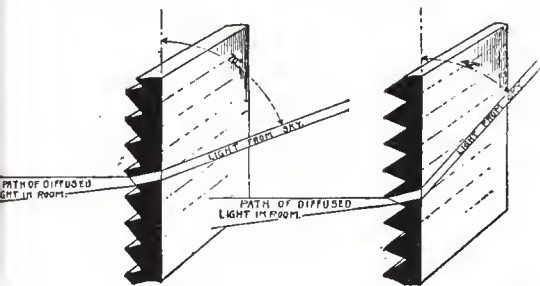


Prism Glass

INCREASES DAYLIGHT—By the use of prism glass in windows, transoms, skylights, etc., it is possible to increase the amount of daylight in the building and avoid the necessity for artificial lighting to a remarkable extent.

GREAT ECONOMY—The efficiency of the prism as a light conveyor is well established, and a proper installation of prism glass has often been the source of great satisfaction and economy, bringing the natural light of day into dim quarters where gas or electric lighting would otherwise be necessary.

WILL NOT PRODUCE LIGHT—It must not be expected that prism glass will PRODUCE light. The ordinary laws of nature will prevail with prism glass or any other, but the refractory qualifications of the prism ribs can be used to diffuse light and by their peculiar powers will illuminate the remote sections of a room which would be in dark shadow, giving to the interior an increased light which the ordinary glass would not admit.



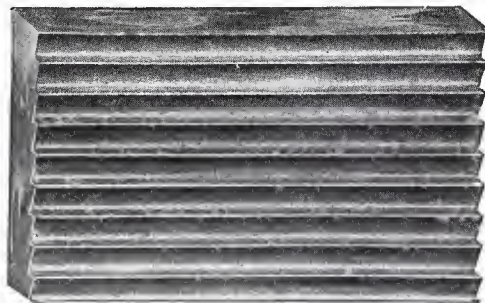
"Imperial" Prism Plate

One Side Ground and Polished

Made up to 82" x 72". Prism Plate Glass is a beautiful product, cuts with a diamond like plate glass, and has the same strength and durability.

Sheet Prism Glass

Sizes up to 60" high, 138" long. Thicknesses up to 42" high, $\frac{1}{4}$ ". Thicknesses 42" to 60" high, $\frac{5}{16}$ ". Mention height in ordering. Prism ribs run horizontally with the length of the sheet. To get proper results glaze with large point upward as shown.



Prism Wire Glass

For protection as well as increased light.

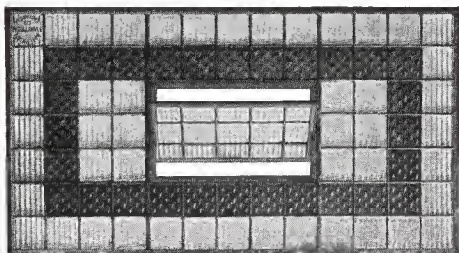
Sizes up to 42" high, 138" long. Thickness $\frac{3}{8}$ ". Mention height in ordering.

Approved by Board of Fire Underwriters.



Daylight and Fresh Air Make a Store Attractive

Every merchant needs daylight and fresh air, quantities of both, to successfully sell his wares. True he can struggle along with insufficient daylight, augmented by many artificial lights; but if he would make his store inviting—make his displays attractive—he must have daylight and fresh air. Pressed Prism Tile Transoms diffuse light and afford abundant ventilation.



Pressed Prism Tiles

Made either in 4" x 4" or 5" x 5" squares. The fancy border tiles give a distinctly artistic appearance as shown in the sectional drawing. Tile prism work is set in hard-metal glazing, either zinc

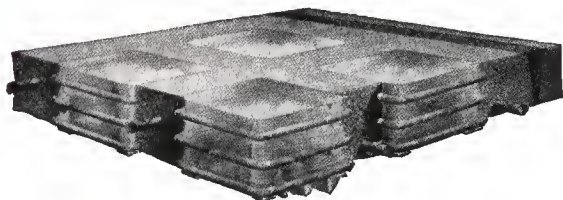
finish or copper-plated, with ornamental border tiles if desired, all lights sufficiently re-enforced with steel bars to make them solid and rigid. Pivot ventilators are mounted in steel standards, and may be equipped with screens. Geometric designs made of sheet prism glass set in plain metal or copper-plated, may be obtained, and used with very artistic and satisfactory results, also prism glass set in solid copper bars, if desired. See pages 157 to 170 (in Art Glass Section).



Sidewalk Glass

for Lighting Dark Basements, Vaults and Cellars

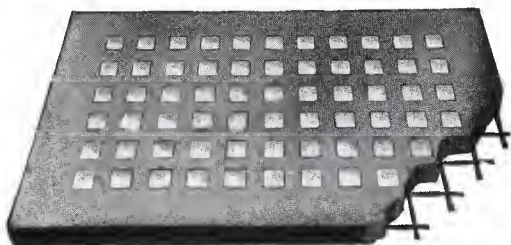
The glass of square, or circle shape, is imbedded in concrete reinforced with steel bars to secure substantial construction and the panel made to any desired dimension.



VARIOUS FORMS OF GLASS LENSES are used for different conditions, either flat pressed units, or drop-lenses of a single prism or multiple prism lenses according to the effect desired.

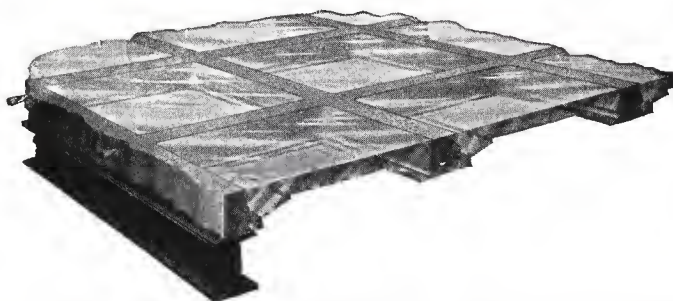
THE SLAB IS MADE UP COMPLETE—Glazed and finished in any desired size to fit opening, and where more than one slab is required, the necessary T bars can readily be purchased locally.

SIZE OF OPENINGS must be accurately given either by detailed drawing or blue-print and the conditions of the space to be daylighted should be described fully in order to secure the proper prism-lenses for the best results.



INSTALLATION—The slabs can be installed by any ordinary workman, following directions which accompany shipment, as sizes are exact and the slabs of perfect fit, ready for caulking of joints.

Skylight and Floorlight Glass



Ready-to-set slabs for Roof Lights and Sky Lights—70 per cent. glass area—glass $6\frac{1}{2}$ " square by $1\frac{1}{4}$ " thick, set in reinforced concrete.



“Lighthouse” Quality Chipping and Grinding, Enameling, Embossing, Etching

POPULAR WHERE OBSCURE OR SEMI-TRANSPARENT GLAZING IS DESIRED—The ornamental design of chipped glass, with its brilliant pattern has made it popular where obscure or semi-transparent glazing is desired and its use in high-class fixtures, window or partitions, (especially chipped polished plate) has established its position as a favorite for banks, government buildings, post offices, etc.



Single Process Chipped.

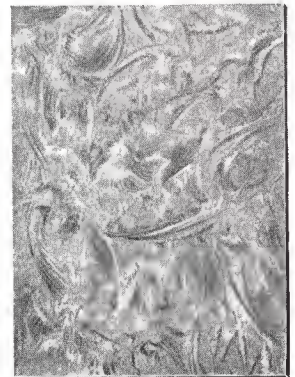
GRINDING OR SANDBLASTING—The glass is first ground, or sand-blasted by subjecting the sheet to a blast of fine sand (under air pressure) which attacks the polish on the exposed side, leaving a milky or frosted surface.

CHIPPING—The ground or sandblasted surface of the glass is coated with glue, which is subjected to a gradual heating process. The drying glue peels or shrinks off in flakes, tearing off slivers of the glass in various forms, each flake leaving its pattern or imprint moulded in the clear glass. The crinkling of the glue is according to nature and no two flakes are alike, yet the general appearance of the sheet is uniform after the shells of glue are off the glass.

SINGLE PROCESS—The single coat of glue peels off, leaving lines of the original ground or sandblasted surface. Such chipping is known as single process work, and the product as “Single Process Chipped Glass.”

DOUBLE PROCESS—When the sheet is re-coated with glue and a second chipping performed, the sandblast lines have disappeared entirely and such is double process work which produces “Double Process Chipped Glass.”

GROUND AND CHIPPED GLASS—Double strength window glass and plate glass as well as rolled rough glass in any size may be ground and chipped (either single process or double process) but it is well to remember that the blasting and heating has a tendency to make the material brittle which might cause breakage in extremely large sizes.



Double Process Chipped.

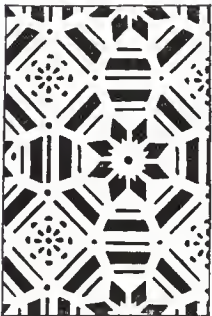


CLEAR MARGIN LETTERING, ETC.—When a margin of clear glass, clear design or lettering, is desired in either ground or chipped glass the “pattern” is protected from the sandblast or the coating of glue and the balance of the surface treated, as above described.

ENAMELED GLASS—A set pattern ground over the whole surface of the glass usually in some geometric figure and commonly upon window glass.

CLEAR AND OBSCURE ENAMELED—When the pattern is blasted leaving the background clear the glass is called “clear” enamel, while the same process upon ground glass produces “obscure” enamel.

SANDBLAST—As in the enamel glass, there are many patterns of sandblast glass made by the same process, which are commonly used for doors and transoms, deck-lights, etc. Picture designs in stencils to suit any taste, imitation lace designs and combination chipped and sandblasted patterns may be made up according to fancy.

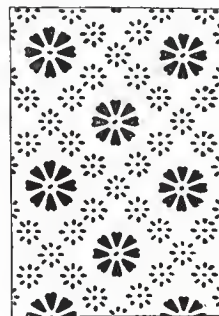


Octagon Enamel.

KITCHEN CABINETS—Geometric designs of chipped glass, enameled or sandblasted glass are used extensively in kitchen cabinets, cupboards, etc.

Embossing, Etching

EMBOSSSED GLASS—Where soft white light is desired, without conspicuous decorative pattern in the glass, embossed



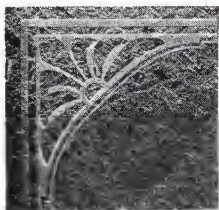
Strawberry Enamel.

plate is both effective and rich in appearance. Translucent, yet not transparent, with its delicate satin finish it is extensively used for store and bank fixtures, street windows, partitions, doors and vestibules.

ACID WORK—It is produced by treating the surface of the glass with hydrofluoric acid, which eats into the annealing and gives the glass a subdued and delicate caste, rendering it semi-obscure or completely obscure, according to the effect desired.

Embossed lines, letters or designs are sunken into the glass, hence the “embossed” effect.

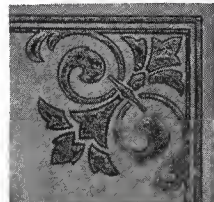
ETCHED GLASS—By the use of hydrofluoric acid, suspended in certain chemicals which modify its strength, the surface of a plate of glass may be etched in snow white effect which makes the glass obscure. Since the acid does not eat into the glass in this process, there is no perceptible depression upon the surface and the appearance is similar to sandblast or ground glass of fine texture. Stencil designs of intricate detail may be worked upon the surface, by etching through a reverse pattern which is protected from the acid by a resisting composition.



Chipped glass with sand-blasted border and corner ornament on chipped side



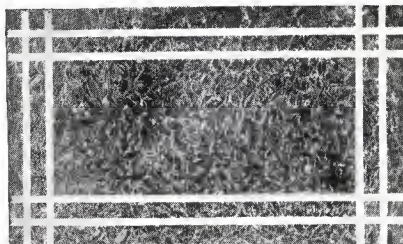
Double line border and number clear, ground or chipped



Ground or clear glass with border and corner ornament chipped



Chipped on clear glass to a line to represent bevel or chipped on beveled plate with clear bevel



Chipped glass with clear or ground double line border



Combination chipped and sand blast design, border and center design clear—or reverse



Monogram and wreath, chipped or ground on clear glass



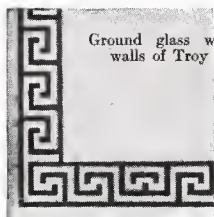
Chipped glass with double line border ground or clear with ornamental corners



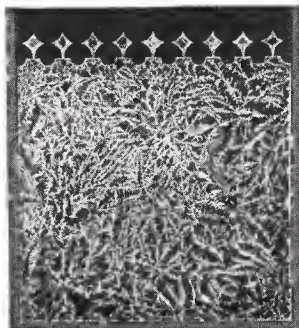
Chipped glass with design work left clear, ground or mitre-cut



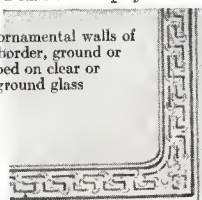
Clear or stippled work on beveled glass with embossed drapery effect



Ground glass with clear walls of Troy border



Chipped glass to a line with ornamental border



Special ornamental walls of Troy border, ground or chipped on clear or ground glass

Various designs of ground, chipped, embossed, etched or mitre cut glass



Automobile Head Light Dimmers Mirrors and Tail-Lights



Last Night—Shaft-Lights—HORRIBLE.

Drive within the law

LENSLITE DIMMERS meet all the requirements of the law. They are too good to miss. No user would exchange them for any other form of light.

EVERY PAIR OF LENSILITE DIMMERS spreads the atmosphere of courtesy. No man can see them without knowing that they solve the Head Light Problem.

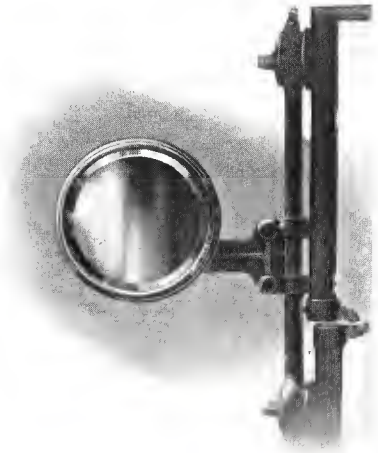


To-night—Lenslite Dimmers—IDEAL.



LENSLITE DIMMERS

A highly efficient lens and sells at 50 per cent. less than any lens on the market that is especially designed for headlight requirements. See State Certificates of Approval, page 105.



"LIGHTHOUSE" POLISHED PLATE MIRRORS

3" to 5" in diameter.

Plain, $\frac{1}{8}$ " thick.

Beveled $\frac{3}{16}$ " thick, $\frac{1}{8}$ " at bevel.



RED TAIL-LIGHT LENSES

2" to $3\frac{3}{4}$ " in diameter. Flat, Flashed Ruby, Convex, Pressed P. M. Ruby.

Any size and quantity.



PRISMO DIMMERS

Meet all the requirements of law, yet give ample driving light. Good low priced diffusing lenses.



Certificates of Approval Lenslite



State of New York
Office of the Secretary of State
Albany

CERTIFICATE APPROVING HEADLIGHT DEVICE

This Certifies that the LENSLITE LENS
manufactured by the MANUFACTURERS GLASS CO., 36 SOUTH DEARBORN ST., CHICAGO, ILL.
having been duly tested in accordance with Chapter 546, Laws of 1913 and found to comply
with the provisions of same, is hereby approved by the Secretary of State to be used on motor
vehicles within the State of New York, subject to the following regulations:

FOCUS - ADJUSTED FOR MINIMUM DIAMETER OF UNMODIFIED BEAM. MAXIMUM CANDLE POWER OF BULB, BEAM HORIZONTAL.

COIL FILAMENT, 18CP. V FILAMENT, 16CP. TILTED 1 FT. PER 100 FT., COIL FILAMENT, 22CP. V FILAMENT, 20CP.



Witness my hand and the seal of office of the Secretary of State,
at the City of Albany, this NINTH day of SEPTEMBER, 1915

James M. Wingo Secretary of State

State of New Jersey



DEPARTMENT OF MOTOR VEHICLES
Certificate Approving Headlight Device

No. 91

This certifies that the Commissioner of Motor Vehicles of the State of New Jersey, in
accordance with Chapter 129, P. L., 1915, has examined the LENSLITE GLASS

manufactured at Manufacturers Glass Company, Chicago, Illinois, a device to
eliminate dazzle and glare from motor vehicle headlights, and has approved such device.

The said Commissioner further certifies that such device properly applied to any
motor vehicle will insure the user of same against arrest or interference by inspectors of this
department and other police authorities for violations of that part of section four of the act
above referred to which relates to dazzle and glare of motor vehicle headlights.

Following is a description of such device:

Name of light or device LENSLITE GLASS Patent No.

General Description lenslite consists of a white rolled glass one side
of which is smooth. On the other side there are
raised circular lens discs one-half inch in diameter
in parallel rows. Every square inch of surface contains
four of these lens discs. The flat surface between the
lens discs permits the transmission of light straight
ahead, while the lens discs spread it to the side of
the road.



DEPARTMENT OF MOTOR VEHICLES OF N. J.

Trenton, August 30, 1915

W. L. Key Commissioner.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

OPAL AND COLORED
GLASS

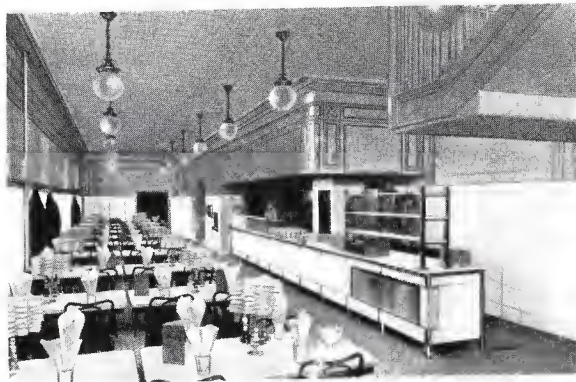
Pages one hundred seven to one hundred nine

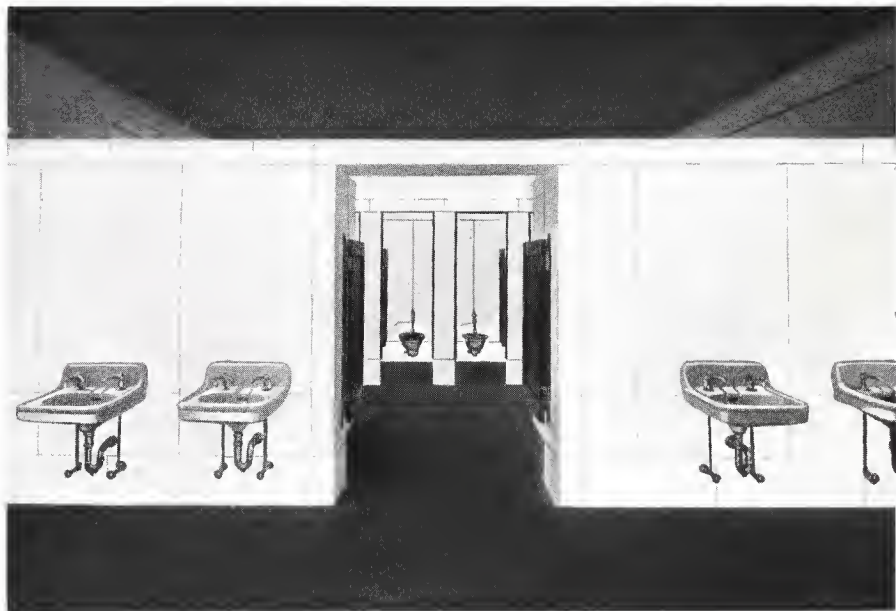


Hospital walls wainscoted with "LIGHTHOUSE-OPAL" glass.

"Lighthouse-Opal" Glass.

WHAT IT IS—A Milk-white glass, homogeneous and opaque, with brilliant natural polish, annealed surface, non-porous, and non-staining, impervious to acid or alkali, "*and strictly sanitary.*" Composed of natural ingredients such as sand, feldspar, fluor-spar, borax, etc that are found in abundant quantities. These materials are fused at a temperature of 3000° Fahrenheit and rolled into sheets varying in thickness from $\frac{3}{16}$ inch to $1\frac{1}{2}$ inch. It is then put through a most thorough process of annealing by passing through varying degrees of heat. It is 42% harder than marble.





SHOULD BE SPECIFIED FOR—hospitals, physicians' rooms, dentists' office, stations, hotels, restaurants, lavatories, showers, kitchens, tunnels, light courts, refrigeration rooms, and refrigerators; also for counter and table tops, shelving, wainscoting, store fronts, and facings.

HOW ATTACHED—Is attached to walls with plastic cement, therefore settlement of buildings cannot break it. Can be treated, ground, beveled, chamfered, drilled and cut as readily as marble or plate glass.

SIZES AND THICKNESSES—Manufactured in sheets as large as 60" wide and as long as 110" of various thicknesses; $\frac{3}{16}$ ", $\frac{5}{16}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{5}{8}$ ", $\frac{3}{4}$ ", 1", $1\frac{1}{4}$ ", and $1\frac{1}{2}$ ".





Colored Glass

Many colors and tints of Opal glass, Cathedral glass and Opalescents are used for leaded glass stained windows, lamp shades and sometimes for sash glazing where the purposes are served by such effects as colors produce, and almost any desired shade or combination of color in variegated tints can be obtained.

CATHEDRAL GLASS—Cathedral glass is made in the ordinary hammered pattern (see page 93) or smooth surfaced, and cast in sheets of approximately $\frac{1}{8}$ " thickness which measure about 30" x 90", and packed in stock sheets, approximately 300 to 350 square feet to the crate.

OPALESCENT GLASS—Opalescent is made in smooth surface or granite surface and cast in sheets about 26" wide by 40" to 50" long, and packed in cases of approximately 125 square feet, net weight of glass 200 pounds.

COLORS FIGURED GLASS—Such patterns as Rippled, Moss, Florentine, etc., may be obtained in all the standard colors and shades. See pages 93 and 94 for general design.

POT COLORS—Double strength and single strength Ruby, Green, Blue, Orange, Violet and White, in solid pot-colors are packed 100 square feet to the case, measuring as large as 37" x 59". This glass is used extensively for railroad switch-lights and signals, dials, lanterns, etc.

FLASHED COLORS—Double strength and single strength flashed colored glass is made by an ingenious method of blowing a thin film of colored glass on the surface of clear glass, and is used extensively for embossing to procure contrast lettering in signs, etc. Made in the same colors and sizes and packed the same as pot colors.

HIRES TURNER



GLASS COMPANY



EXPORT PACKING AND SHIPMENTS

Pages one hundred eleven to one hundred seventeen



Exports to All Parts of the World

Our Export Transactions are handled direct or through such channels as the customer prefers.

Cable Address and Codes

Cable address, Quinton, Philadelphia.

Codes: A B C 5th Edition, Western Union, Bentley's.

Descriptive Illustrations

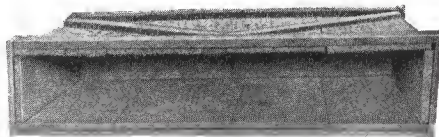
While the general text matter of this catalog is fully descriptive, of all the products handled by us, we have attempted to go even a step further through the use of numerous halftone and line illustrations. These illustrations are so clearly descriptive of our products and their processes of manufacture that a fairly comprehensive and intelligent knowledge may be had of our entire line by a mere survey of the photographs. In the front of the catalog will be found a complete index to each of the several departments and all of the products listed therein. As previously stated editions of this catalog will be furnished in either Spanish, French, or Portuguese.



Showing inner or double compartment of case sometimes used for exporting Rolled Products.

“Lighthouse” 10,000 Mile Export Cases

On this and succeeding pages are shown several of our specially designed types of Export Cases for carrying the various kinds of glass. These cases have so admirably met the severe conditions of export shipping that they have been appropriately termed the “Lighthouse” 10,000 Mile Export Cases.



Single export case.

CONSTRUCTION—As shown by the accompanying cuts our Export Cases are built throughout of extra heavy lumber, and are strongly braced and cleated. We believe them to be the best cases for shipping glass long distances that have ever been devised.



Packing
“Lighthouse” Polished Plate Glass
and Mirrors

Greatest care is exercised in packing Plate Glass and Mirrors for both domestic and export shipment. No item is overlooked to provide against scratches and stains. The contents of cases are so well packed and protected by wrappings of paper and insertions of hay or straw that all danger of damage from shocks and jars is practically eliminated. Mirror Plates are further protected by a waterproof envelope.



Hay packing.



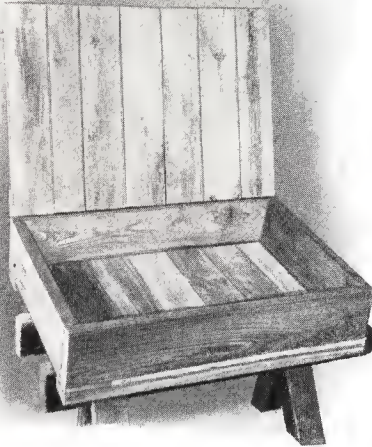
Ready for lid.

Packing Window Glass

The same exacting care is given to the packing of window glass as is exercised in packing our other products. Regular packing is in 100 feet cases, but special arrangements can be made for cases to contain other quantities.



Ready for shipment.



Cut on the left features empty case ready for packing "Lighthouse" Quality Polished Plate Glass.

Cut on the right shows same case packed, nailed and stenciled ready for export.

Conversion Metric Measures and U. S. Measures

Lengths

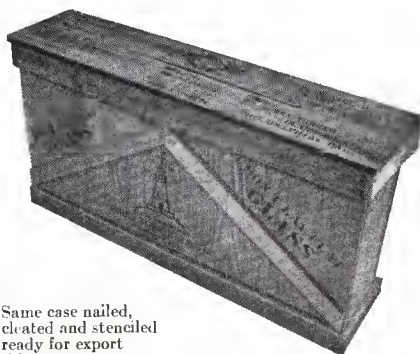
Centimeters to Inches	Meters to Feet	Inches to Centimeters	Feet to Meters
1 equals 0.3937	1 equals 3.2808	1 equals 2.5400	1 equals 0.3048
2 " 0.7874	2 " 6.5617	2 " 5.0800	2 " 0.6096
3 " 1.1811	3 " 9.8425	3 " 7.6200	3 " 0.9144
4 " 1.5748	4 " 13.1233	4 " 10.1600	4 " 1.2192
5 " 1.9685	5 " 16.4042	5 " 12.7000	5 " 1.5240
6 " 2.3622	6 " 19.6850	6 " 15.2400	6 " 1.8288
7 " 2.7559	7 " 22.9658	7 " 17.7800	7 " 2.1336
8 " 3.1496	8 " 26.2467	8 " 20.3200	8 " 2.4384
9 " 3.5433	9 " 29.5275	9 " 22.8600	9 " 2.7432
10 " 3.9370	10 " 32.8083	10 " 25.4001	10 " 3.0480

Metric Measures of Length

Millimeter (.001 meter)	equals 0.03937 inch
Centimeter (.01 meter)	" 0.3937 inch
Decimeter (.1 meter)	" 3.937 inches
Meter	" 39.37 inches
Decameter (10 meters)	" 32.8083 feet
Hectometer (100 meters)	" 328.083 feet
Kilometer (1000 meters)	" 3280.83 feet
Kilometer (1000 meters)	" 0.62137 mile
Myriameter (10,000 meters)	" 6.2137 miles



Export single case in
process of packing with
"Lighthouse" Quality
Solid Wire Glass



Same case nailed,
cleated and stenciled
ready for export
shipment

Conversion Metric Measures and U. S. Measures

Areas

Square Centimeters to Square Inches	Square Meters to Square Feet	Square Inches to Square Centimeters	Square Feet to Square Meters
1 equals 0.1550	1 equals 10.7639	1 equals 6.4516	1 equals 0.0929
2 " 0.3100	2 " 21.5278	2 " 12.9032	2 " 0.1858
3 " 0.4650	3 " 32.2917	3 " 19.3548	3 " 0.2787
4 " 0.6200	4 " 43.0556	4 " 25.8064	4 " 0.3716
5 " 0.7750	5 " 53.8195	5 " 32.2580	5 " 0.4645
6 " 0.9300	6 " 64.5834	6 " 38.7196	6 " 0.5574
7 " 1.0850	7 " 75.3473	7 " 45.1612	7 " 0.6503
8 " 1.2400	8 " 86.1112	8 " 51.6128	8 " 0.7432
9 " 1.3950	9 " 96.8751	9 " 58.0644	9 " 0.8361
10 " 1.5500	10 " 107.6390	10 " 64.5160	10 " 9.9290

Metric Surface Measures

Centare (1 square meter)	equals 1,550 square inches
Are (100 square meters)	" 119.6 square yards
Hectare (10,000 square meters)	" 2.471 acres



Conversion Metric Weights and U. S. Weights

Weights

Grams to Grains		Grams to Avoirdupois Ounces		Avoirdupois Ounces to Grams		Avoirdupois Pounds to Kilograms	
1 equals	15.4324	1 equals	0.0353	1 equals	28.3495	1 equals	0.4536
2 "	30.8647	2 "	0.0706	2 "	56.6991	2 "	0.9072
3 "	46.2971	3 "	0.1058	3 "	85.0486	3 "	1.3608
4 "	61.7294	4 "	0.1411	4 "	113.3981	4 "	1.8144
5 "	77.1618	5 "	0.1764	5 "	141.7476	5 "	2.2680
6 "	92.5941	6 "	0.2116	6 "	170.0972	6 "	2.7216
7 "	108.0265	7 "	0.2469	7 "	198.4467	7 "	3.1752
8 "	123.4589	8 "	0.2822	8 "	226.7962	8 "	3.6287
9 "	138.8912	9 "	0.3172	9 "	255.1457	9 "	4.0823
10 "	154.3236	10 "	0.3527	10 "	283.4954	10 "	4.5359

Metric Weights

Milligram (.001 gram)	equals	0.0154 grain
Centigram (.01 gram)	"	0.1543 grain
Decigram (.1 gram)	"	1.5432 grains
Gram	"	15.4324 grains
Decagram (10 grams)	"	0.3527 ounce avoird.
Hectogram (100 grams)	"	3.5274 ounces avoird.
Kilogram (1000 grams)	"	2.2046 pounds avoird.
Myriagram (10,000 grams)	"	22.0462 pounds avoird.
Quintal (100 kilos)	"	220.4622 pounds avoird.
Millier or ton (1000 kilos)	"	2,204.6223 pounds avoird.

Approximated Rolled Glass Weights

Packed for Export

	Weight Unboxed Lbs. per Sq. Ft.	SINGLE SOLID BOXES		DOUBLE SOLID BOXES	
		When Packed Feet Per Case	Total Weight Packed Lbs. per Sq. Ft.	When Packed Feet Per Case	Total Weight Packed Lbs. per Sq. Ft.
$\frac{1}{8}$ " Glass	2.	180	3.50	150	4.75
$\frac{3}{16}$ " "	2.80	140	4.90	120	6.
$\frac{1}{4}$ " "	3.75	125	5.50	100	7.
$\frac{1}{4}$ " Aqueduct Wire	4.	120	5.75	100	7.25
$\frac{1}{4}$ " Corrugated Wire	4.25	100	6.75	45	13.

Window Glass Weights

Export Shipping Weights - Single thick, per 100 feet, 145 to 155 lbs. per case; double thick, per 100 feet, 190 to 215 lbs. per case.

Plate Glass and Mirror Weights

For Export - Plate glass, $\frac{1}{4}$ " to $\frac{5}{16}$ " thick, packed for export 4 to $5\frac{1}{2}$ lbs. per square foot, depending on size of glass and quantity packed in ease.

HIRES TURNER



GLASS COMPANY



MAXIMUM
SIZES, THICKNESSES AND
APPROXIMATE
NET AND GROSS
WEIGHTS

ALSO GLAZING INSTRUCTIONS

Pages one hundred nineteen to one hundred twenty-one



*Domestic Packing
Maximum Sizes, Thicknesses and Approximate
Net and Gross Weights*

Plain Figured Glass

STYLE	Thickness	Maximum Width	Maximum Length	Approximate Net Weight per Sq. Ft. Pounds	Domestic Approximate Shipping Weight per Sq. Ft. Pounds
Florentine.....	$\frac{1}{8}$	48	132	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	48	132	$2\frac{1}{2}$	$3\frac{1}{4}$
Moss.....	$\frac{1}{8}$	48	132	2	$2\frac{1}{2}$
" (Thin).....	$\frac{1}{8}$	48	132	$2\frac{1}{2}$	$3\frac{1}{4}$
".....	$\frac{1}{8}$	40	126	$1\frac{3}{4}$	$2\frac{1}{4}$
Mystic.....	$\frac{1}{8}$	44	132	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	44	132	$2\frac{1}{2}$	$3\frac{1}{4}$
Fig. No. 2.....	$\frac{1}{8}$	42	110	2	$2\frac{1}{2}$
Fig. No. 2.....	$\frac{1}{8}$	42	110	$2\frac{1}{2}$	$3\frac{1}{4}$
Hammered Cathedral.....	$\frac{1}{8}$	30	90	$1\frac{1}{2}$	2
Double Rolled Cathedral.....	$\frac{1}{8}$	30	90	$1\frac{1}{2}$	2
Opalescent Cathedral.....	$\frac{1}{8}$	30	90	$1\frac{1}{2}$	2
Opal.....	$\frac{1}{8}$	30	40	$1\frac{1}{2}$	2
Rippled.....	$\frac{1}{8}$	30	90	$1\frac{1}{2}$	2
Rippled (Thin).....	$\frac{1}{8}$	30	90	$1\frac{1}{4}$	$1\frac{3}{4}$
Colonial.....	$\frac{1}{8}$	44	160	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	44	160	$2\frac{1}{2}$	$3\frac{1}{4}$
Pyramid Oriental.....	$\frac{1}{8}$	48	132	$3\frac{3}{4}$	$4\frac{1}{2}$
Cohweb.....	$\frac{1}{8}$	54	120	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	54	126	$2\frac{1}{2}$	$3\frac{1}{4}$
".....	$\frac{1}{8}$	62	120	$3\frac{3}{4}$	$4\frac{1}{4}$
".....	$\frac{1}{8}$	62	120	5	6
Aqueduct.....	$\frac{1}{8}$	60	120	$4\frac{1}{2}$	$5\frac{1}{4}$
".....	$\frac{1}{8}$	60	120	$5\frac{3}{4}$	$6\frac{3}{4}$
Pressed Lens and Lenslite.....	$\frac{1}{8}$	48	120	$2\frac{1}{2}$	$3\frac{1}{2}$

"Lighthouse-Opal"

"Lighthouse-Opal".....	$\frac{1}{8}$	45	120	$2\frac{3}{4}$	$3\frac{1}{2}$
".....	$\frac{1}{4}$	55	120	$3\frac{1}{4}$	$4\frac{1}{4}$
".....	$\frac{1}{8}$	57	130	4	$4\frac{3}{4}$
".....	$\frac{1}{8}$	57	130	$5\frac{3}{4}$	$6\frac{3}{4}$
".....	$\frac{1}{2}$	55	115	$6\frac{3}{4}$	8
".....	$\frac{1}{8}$	55	115	7	$8\frac{1}{4}$
".....	$\frac{5}{8}$	50	120	8	$9\frac{3}{4}$
".....	$\frac{3}{4}$	57	115	10	12
".....	$\frac{7}{8}$	48	125	$12\frac{1}{8}$	$14\frac{1}{2}$
".....	1	50	105	13	15

Prism Glass

		Height	Length		
Prism (Sheet) Thin.....	$\frac{1}{4}$	42	120	$3\frac{1}{2}$	$4\frac{1}{4}$
Prism (Sheet) Regular.....	$\frac{3}{8}$	60	138	4	$4\frac{3}{4}$
Glazed Prism Tiles.....	$\frac{5}{8}$			$5\frac{1}{4}$	$6\frac{1}{2}$
Prism Wired Glass.....	$\frac{1}{8}$	42	138	5	6
"Imperial" Prism-Plate Glass.....	$\frac{3}{8}$	72	82	$4\frac{1}{2}$	$5\frac{1}{4}$

Rough and Ribbed

Rough.....	$\frac{1}{8}$	48	132	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	48	132	$2\frac{1}{2}$	$3\frac{1}{4}$
".....	$\frac{1}{4}$	62	136	$3\frac{3}{4}$	$4\frac{1}{2}$
".....	$\frac{3}{8}$	62	132	$5\frac{1}{4}$	6
".....	$\frac{1}{2}$	40	240	$7\frac{1}{2}$	8
Ribbed.....	$\frac{1}{8}$	48	132	2	$2\frac{1}{2}$
".....	$\frac{1}{8}$	48	132	$2\frac{1}{2}$	$3\frac{1}{4}$
".....	$\frac{1}{4}$	62	136	$3\frac{3}{4}$	$4\frac{1}{2}$
".....	$\frac{3}{8}$	62	132	$5\frac{1}{4}$	6
".....	$\frac{1}{2}$	48	130	$7\frac{1}{2}$	8



*Domestic Packing
Maximum Sizes, Thicknesses and Approximate
Net and Gross Weights*

Wire Glass

STYLE		Thickness	Maximum Width	Maximum Length	Approximate Net Weight per Sq. Ft. Pounds	Domestic Approximate Shipping Weight per Sq. Ft. Pounds
Polished	Wire Glass	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
"	"	$\frac{1}{8}$	48	130	4	$4\frac{3}{4}$
"	"	$\frac{3}{8}$	46	130	8	$8\frac{1}{2}$
Mystic	"	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
"	"	$\frac{3}{8}$	48	130	$5\frac{1}{4}$	6
Moss	"	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
Cobweb	"	$\frac{1}{8}$	48	130	2	$2\frac{1}{2}$
"	"	$\frac{1}{8}$	48	130	$2\frac{1}{2}$	$3\frac{1}{4}$
"	"	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
"	"	$\frac{3}{8}$	48	130	$5\frac{1}{4}$	6
Prism	"	$\frac{3}{8}$	42	138	5	6
Pyramid Oriental	"	$\frac{1}{4}$	48	132	$3\frac{3}{4}$	$4\frac{1}{2}$
Aqueduct	"	$\frac{1}{2}$	48	132	$4\frac{1}{4}$	5
Rough	"	$\frac{1}{8}$	48	130	2	$2\frac{1}{2}$
"	"	$\frac{1}{8}$	48	130	$2\frac{1}{2}$	$3\frac{1}{4}$
"	"	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
"	"	$\frac{3}{8}$	48	130	$5\frac{1}{4}$	6
"	"	$\frac{1}{2}$	48	130	$7\frac{1}{2}$	8
Ribbed	"	$\frac{1}{8}$	48	130	2	$2\frac{1}{2}$
"	"	$\frac{1}{8}$	48	130	$2\frac{1}{2}$	$3\frac{1}{4}$
"	"	$\frac{1}{4}$	48	130	$3\frac{3}{4}$	$4\frac{1}{2}$
"	"	$\frac{3}{8}$	48	130	$5\frac{1}{4}$	6
"	"	$\frac{1}{2}$	48	130	$7\frac{1}{2}$	8
Rough Wire Floor Glass	"	$\frac{3}{4}$	12	12	8	$9\frac{3}{4}$
Ribbed	"	$\frac{3}{4}$	12	12	8	$9\frac{3}{4}$
Ground	"	$\frac{3}{4}$	12	12	8	$9\frac{3}{4}$

Polished Figured Glass

"Imperial"	Prism-Plate	about	$\frac{1}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$
"	Style 01	"	$\frac{1}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$
"	Style 02	"	$\frac{3}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$
"	Style 03	"	$\frac{1}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$
"	Style 04	"	$\frac{1}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$
"	Style 05	"	$\frac{1}{4}$	70	82	$3\frac{3}{4}$	$4\frac{1}{2}$

Polished Plate Glass and Mirrors

Polished Plate Glas and Polished Plate Mirrors	$\frac{1}{8}$	See page 17	See page 17	2	$2\frac{1}{4}$
	$\frac{3}{16}$			$2\frac{1}{2}$	$3\frac{1}{4}$
	$\frac{1}{4}$			$3\frac{1}{2}$	$4\frac{3}{4}$
	$\frac{5}{16}$			$3\frac{3}{4}$	5
	$\frac{3}{8}$			5	6
	$\frac{1}{2}$			$7\frac{1}{4}$	8
	$\frac{5}{8}$			$8\frac{1}{2}$	$9\frac{1}{4}$
	$\frac{3}{4}$			$9\frac{1}{2}$	$10\frac{1}{2}$
	$\frac{7}{8}$			11	13
	1			13	15
	$1\frac{1}{4}$			16	19
	$1\frac{1}{2}$			20	24



Glazing

While there is no uniformity in specifications governing the method of glazing different styles of glass, it is nevertheless advisable to call attention to some features which have been developed through the experience of the glass houses in this business.

APPEAL TO ARCHITECTS—It is especially desirable that all glass to be specified for a building be placed under one heading in the architect's specifications under the heading—"Glass and Glazing."

ACCURACY IS A NECESSITY—Use a standard rule, true to gauge; specify the size plainly. For instance, 56 inches might be confused if written 5' 6", and cut 66 inches—as 5 feet 6 inches.

ALWAYS SPECIFY WIDTH FIRST—In measuring, it is advisable to allow a little play and measure inside the rabbet. See that rabbet is made to accommodate glass of the thickness ordered; i. e., order glass of proper thickness to fit rabbet. Measure the opening and see if all sides are squared, especially if metal work is to be glazed, it is essential to have perfect fit, and in large sizes it is not uncommon to find a warped frame, or not exactly square, slightly different at one side as compared with the other.

BE SPECIFIC—It is better to give an abundance of information rather than leave anything indefinite, or to be taken for granted. Mistakes will follow carelessness, and corrections involve loss of time and expense.

GLAZING PLATE GLASS—Plate glass should rest on two pads of felt, leather, lead, oakum or soft wood blocks, one near each end, not against bare metal, or at a single bearing-point which might cause breakage through settling of building, vibration, etc. The soft wood blocks or lead strips are to be preferred.

GLAZING WINDOW GLASS—In glazing window glass the convex side should be on outside of building after being glazed. Glazed thus the slight bend does not distort the vision so much as otherwise and is not so apt to be broken in glazing.

EXPANSION AND CONTRACTION—Do not fasten or bind glazing-mouldings too tight, as it is necessary to allow for expansion and contraction, vibration and readjustment of construction.

USE PURE PUTTY—Have sash-rabbet well oiled or painted so that putty will adhere. Give fresh putty glazing time to set before handling or hanging sash. Don't try to back-putty glass with corrugated or figured surface, as the putty cannot be removed from the ridges in the glass.

STEEL SASH—Steel sash glazing requires special putty for metal rabbets.

CAUTION—When glass of any kind has been delivered to a building packed in cases or with paper between the sheets, it is advisable to store the glass under cover in a dry place and unpack it to avoid stains which come from drying out of damp hay, straw, paper, or other packing materials.

HIRES TURNER



GLASS COMPANY



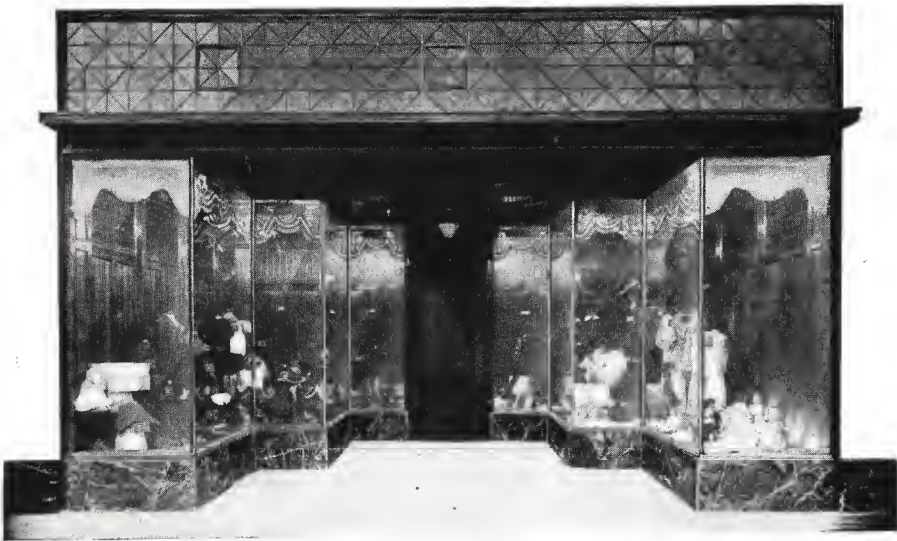
“Zouri-Lighthouse”

STORE DISPLAY WINDOWS

PATENT ALL GLASS
STORE FRONTS

AWNINGS

Pages one hundred twenty-three to one hundred forty-five



*An effective store front, permitting six separate and distinct displays without overcrowding.
Note the wide entrance.*

“Zouri-Lighthouse” Store Display Windows

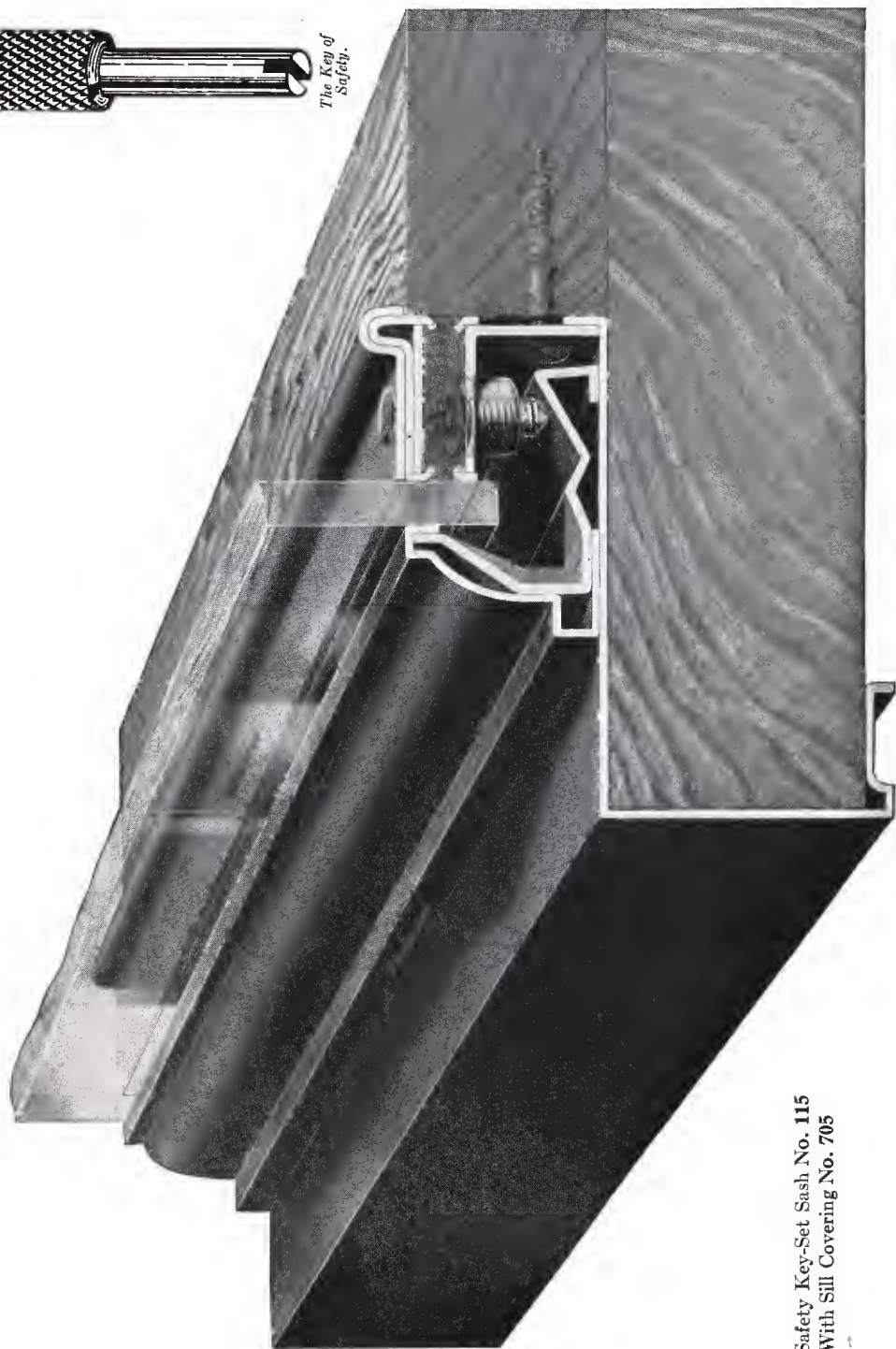
*Make retail businesses show big
increase in sales*

The enhanced appeal—the more intimate acquaintanceship, and the better knowledge that they establish in the mind of the public of what merchants have to offer inside the store means sales, Sales, SALES, and MORE SALES, in ever increasing volume.

- increase display space 100 to 300 per cent.
- sell more goods.
- permit unobstructed view.
- make smart displays possible.
- are convenient to dress.
- do not collect dust and dirt.
- can be cleaned easily.
- practically eliminate sweat and frost.
- provide excellent ventilation.
- minimize danger of breakage.
- deserve a lower rate of insurance.



*The Key of
Safety.*



Full size illustration.

**Safety Key-Set Sash No. 115
With Sill Covering No. 705**

Free from danger of *direct screw pressure* or a resilient rabbet. Its inner member is rigid. There are no screws visible. Equipped with Murnane Self-adjusting Setting Blocks. It is proof against carelessness in glass setting.



No. 115 Sash

*Used for the Setting of Plate and Prism Glass
in Store Fronts*

SOLID COPPER—All material in this sash is *solid copper* except the small amount of white metal used to fasten the bracket in the inner member and the brass screw and bushing by means of which the face moulding is held in position.

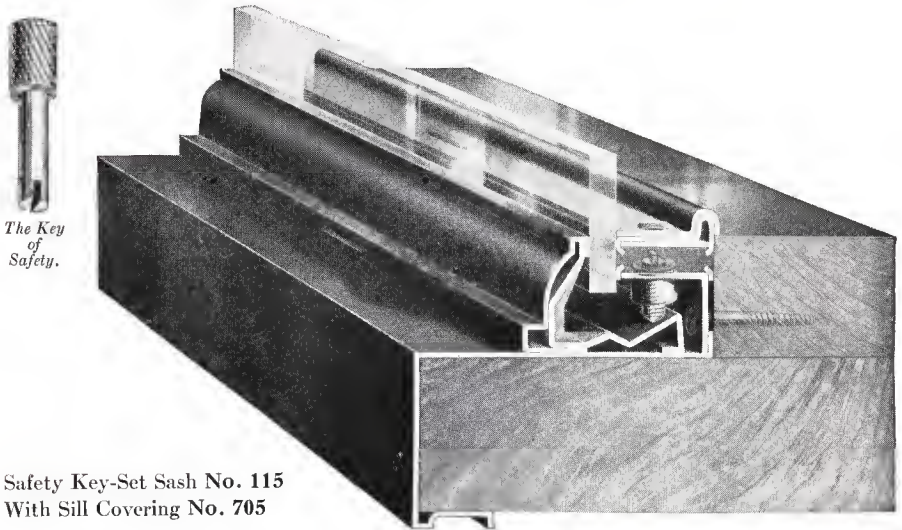
RIGID RABBIT—Note particularly that the inner member is a rigid rabbit thereby assuring an absolutely straight, uniform and unyielding surface for the glass to rest against—a surface that will not give or bend when pressure is exerted against it—an essential for safe setting.

DUST SLIDE—When desired a dust slide may be had on the top of the inner member. This is the only all-metal sash with an outside dust slide on an inner member than can be operated at all times and is not rendered practically useless because of inaccessibility and acute angles. This slide makes it possible to keep out the dust in summer time and to permit of ventilation in winter time. Sufficient ventilation and drainage holes are provided in both inner and outer members.

NO EXPOSED SCREWS—PERFECTLY SMOOTH LINES—There are no exposed screws on this sash. The face moulding is perfectly smooth and of fine lines. The only pressure exerted on the glass is indirect, and the screws are fastened in place by means of a key—the amount of pressure being determined by the *sense of touch* and not by means of a risky screw driver.

ADJUSTABLE SETTING BLOCKS—The glass is set on adjustable setting blocks—a remarkable invention—fully described and illustrated on pages 135 and 136.

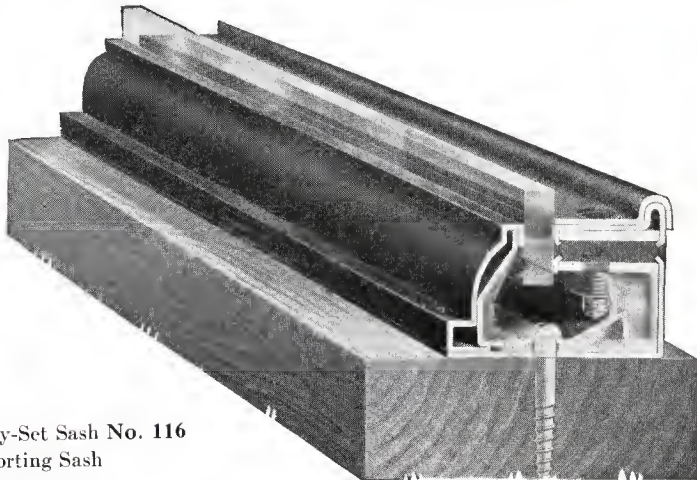
HOW USED—No. 115 Sash may be used on sill, side and head jambs and requires a wood backing. For self-supporting sash see No. 116 shown on pages 126 and 140. Sill covering No. 705 is shown on opposite page in conjunction with No. 115 Sash but it may be eliminated when desired in which case the sash will appear exteriorly similar to No. 116.



One-half Actual Size

FEATURES—

1. Indirect screw pressure on glass.
2. Rigid rabbet—no yielding—consequently no distortion of glass and resultant breakage.
3. Face moulding absolutely smooth with neat lines.
4. Durably and substantially constructed of solid copper.
5. Glass set on adjustable setting blocks—the modern method for safety.
6. Sash is *key-set* permitting delicate adjustment of pressure.

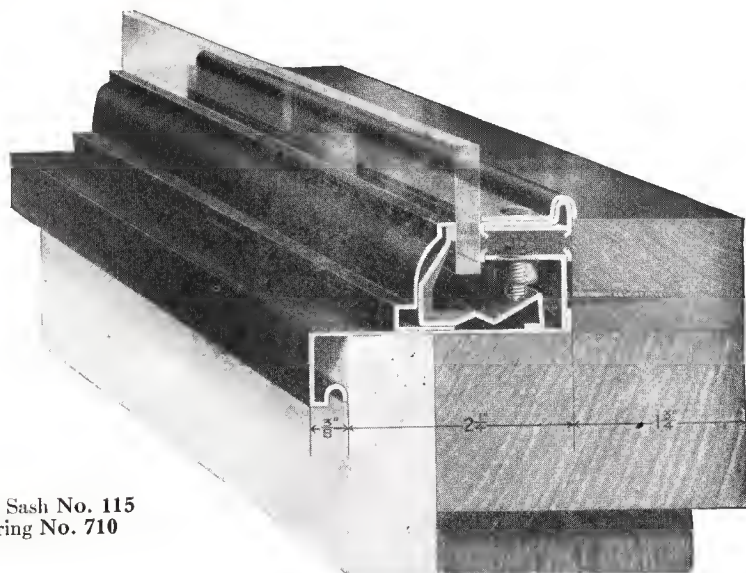


Safety Key-Set Sash No. 116
Self-Supporting Sash

Two-thirds Actual Size



The Key
of
Safety.



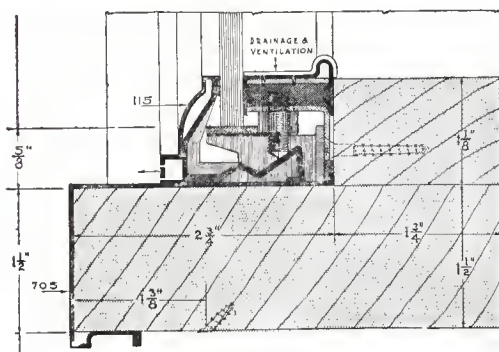
One-half Actual Size.

Safety Key-Set Sash No. 115
With Sill Covering No. 710

The cut above shows No. 115 Sash with No. 702 Sill Covering designed particularly to be used with marble as shown.

NO WATER STAINS ON MARBLE—This covering is so constructed to fit snugly to marble and by having drip eliminates water stains on the marble.

The woodwork underneath of the sash has the same protection as on No. 705 Sill Covering shown above.



One half Size.

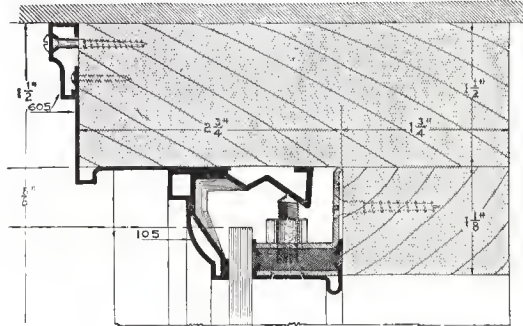
No. 115 Sash with No. 705 Sill Covering.

FEATURES—

This cut shows cross section detail of No. 115 Sash together with No. 705 Sill Covering. One-half size.

PREVENTS ENTRANCE OF WATER—Note that the covering extends to back of sash and then upwards with mall lip thereby preventing any water from getting to the wood work to cause deterioration.

WITH OR WITHOUT BULKHEAD CONSTRUCTION—The covering may be used with or without bulkhead construction, and forms an excellent protection for sill.



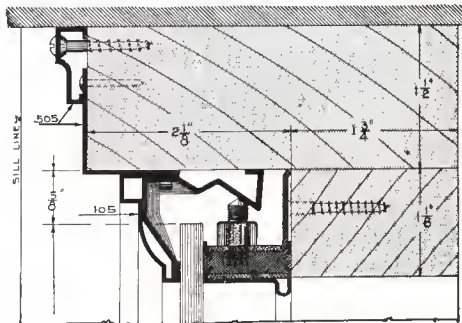
One-half Size.

No. 105 Sash with No. 605 Head Jamb Covering

FEATURES—

This cut shows cross section detail of No. 105 Sash together with No. 605 Head Jamb Covering. It is a half size illustration.

No. 605 Moulding possesses a drip to prevent water from running into sash and down the glass.



One-half Size.

No. 105 Sash with No. 505 Side Jamb Covering

FEATURES—

This cut shows cross section detail of No. 105 Sash with No. 505 Side Jamb Covering. It differs from No. 605 only by absence of drip which is unnecessary for side.

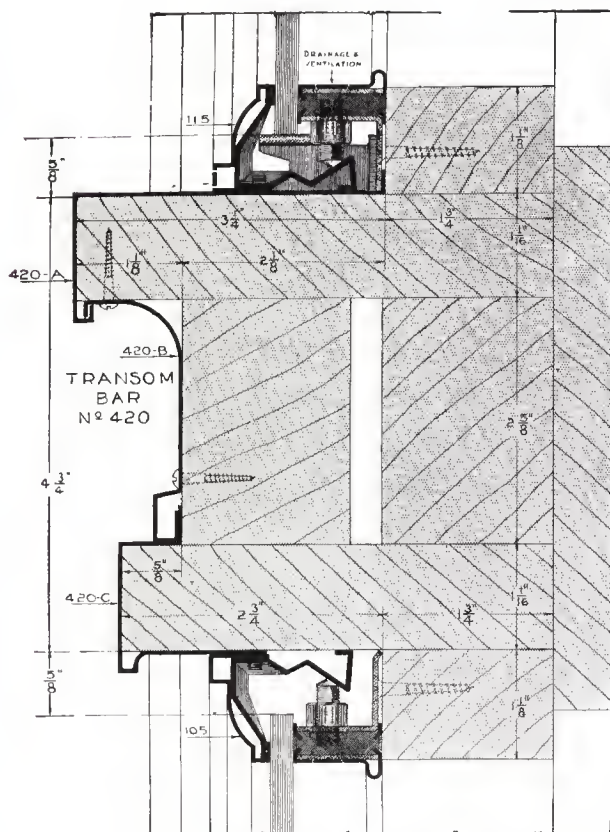
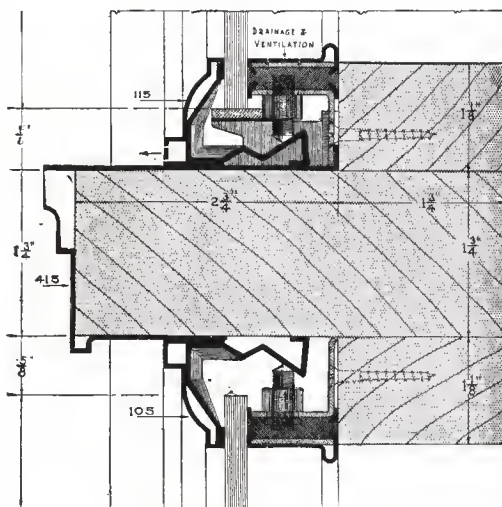
The general design otherwise is practically the same as No. 605 Head Jamb Covering shown above.



This cut shows cross section detail of Transom Bar Covering No. 415.

It is $1\frac{3}{4}$ " in width.

The detail is *one-half size*.



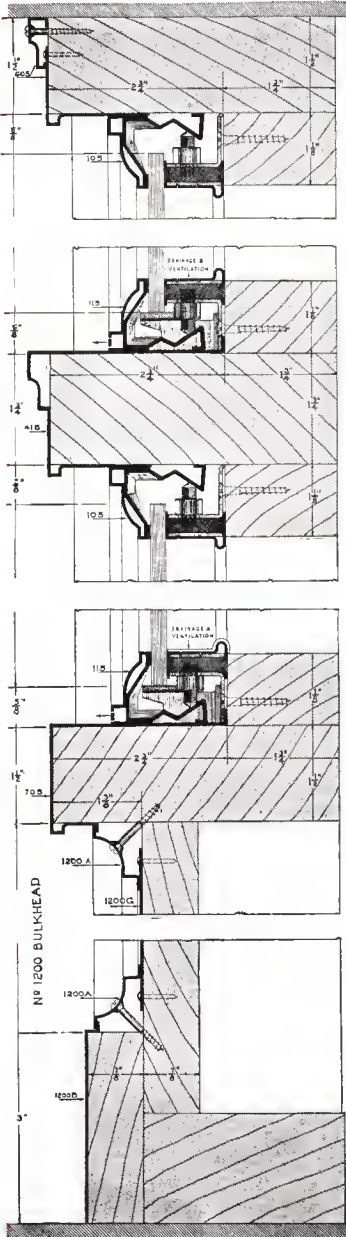
This cut shows cross section detail of Transom Bar Covering No. 420.

It is $4\frac{3}{4}$ " wide.

The design is particularly neat and attractive.

Details of wider Transom Bar Coverings may be had on application.

This detail is *one-half size*.



One-third Size.

*Vertical Section
from
Lintel to Sidewalk*

Showing No. 115 and No. 105
Sash and Coverings.

This section shows how to obtain the exact glass sizes as far as height is concerned. Take length of full opening and deduct $\frac{5}{8}''$ for top and $\frac{5}{8}''$ for bottom as shown.

It also shows the size of the necessary millwork.

At the bottom is shown a vertical section of No. 1200 Bulkhead Covering with copper panel. This may also be had with swing sash panel, using glass instead of copper. See page 132.

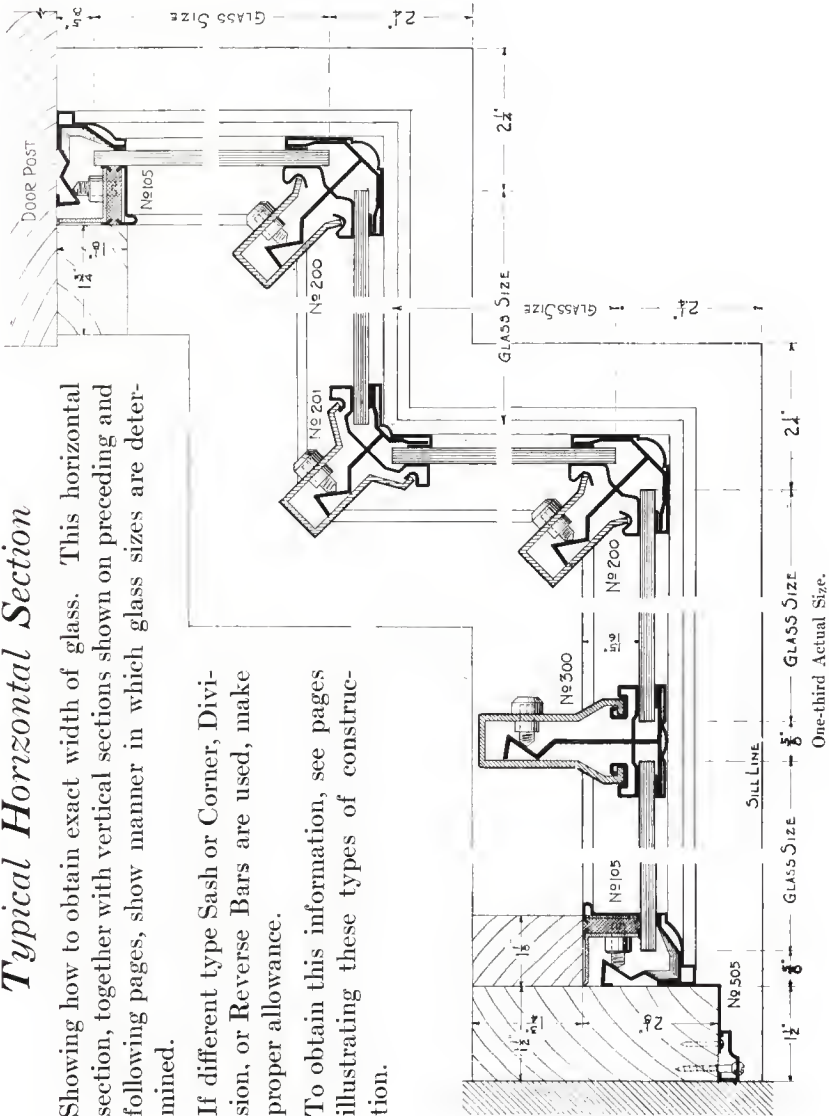


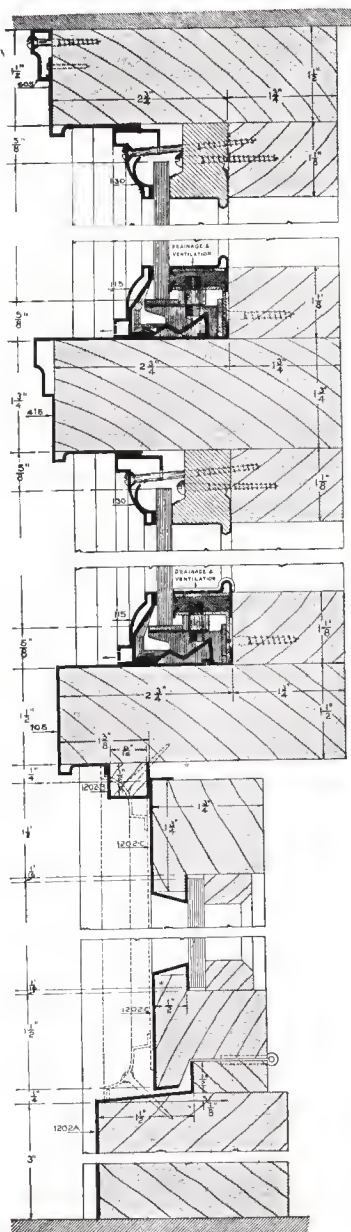
Typical Horizontal Section

Showing how to obtain exact width of glass. This horizontal section, together with vertical sections shown on preceding and following pages, show manner in which glass sizes are determined.

If different type Sash or Corner, Division, or Reverse Bars are used, make proper allowance.

To obtain this information, see pages illustrating these types of construction.





One-third Size.

Vertical Section from Lintel to Sidewalk

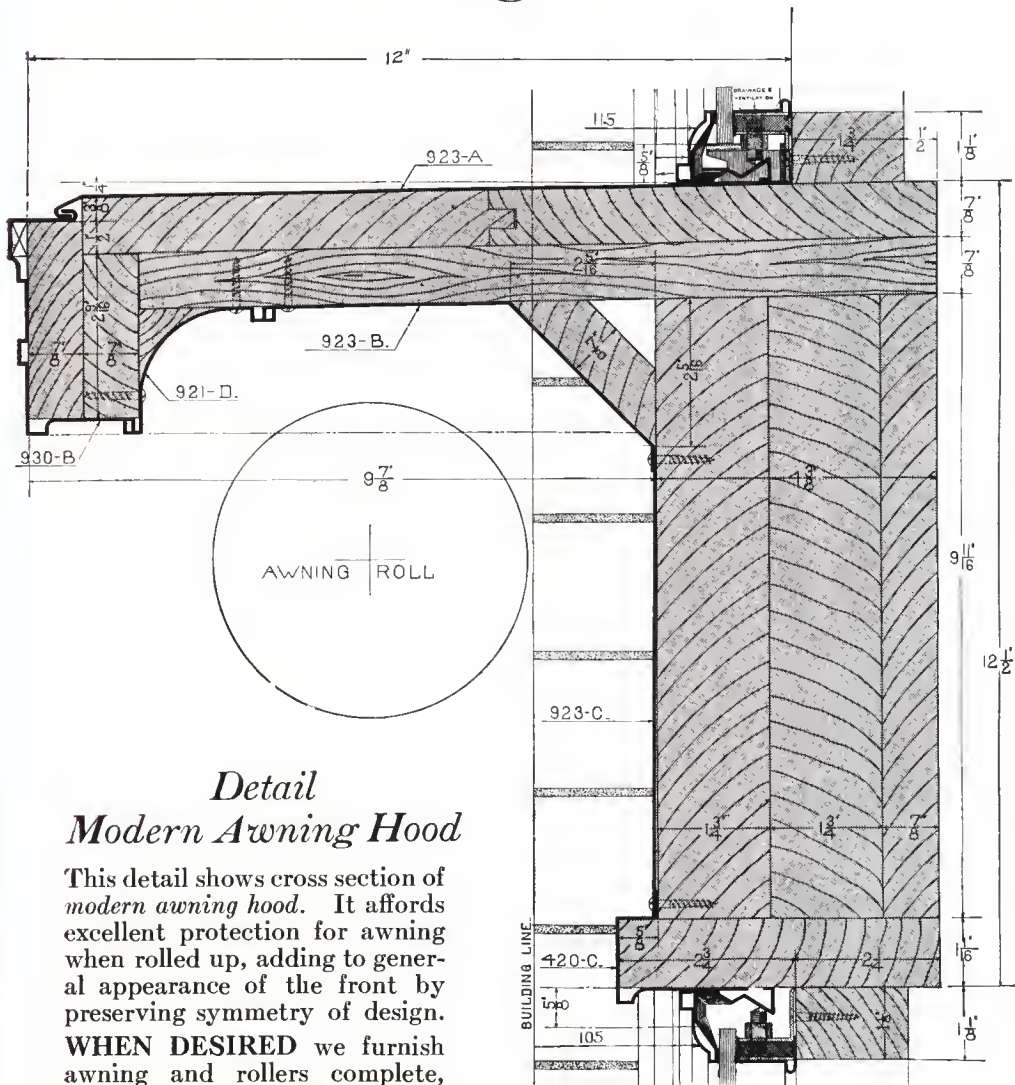
Showing No. 115 and No. 130
Sash and Coverings.

This detail shows No. 115 Sash used on the sill in conjunction with No. 130 Sash on the sides and head of both plate and transom glass.

This is an excellent construction where it is desired to reduce cost and yet maintain same general appearances of the standard No. 115 and No. 105 Sash.

This detail shows vertical section of No. 1202 Bulkhead Covering which provides for swing or hinged sash with glass panel. For stationary copper panel see page 130.

To determine height of glass see explanation on page 130.



Detail Modern Awning Hood

This detail shows cross section of *modern awning hood*. It affords excellent protection for awning when rolled up, adding to general appearance of the front by preserving symmetry of design.

WHEN DESIRED we furnish awning and rollers complete, using either Anton's Lateral Arms or frame work fastened to sides of building. For description see pages 144 and 145.

NO WOODWORK—We furnish *no woodwork*, but if the details are carefully followed no difficulty in erection will be experienced.

DOES NOT NEUTRALIZE LIGHT—The above design permits awning to be swung from base of transom glass and thereby does not neutralize the light giving qualities of the specially designed transom glass.

Other designs of awning transom bar covers or hoods showing cast iron bracket supports instead of wood, may be had on application.

One-third Actual Size.
Awning Transom Bar No. 923 with Safety Key-
Set Sash No. 115 and No. 105

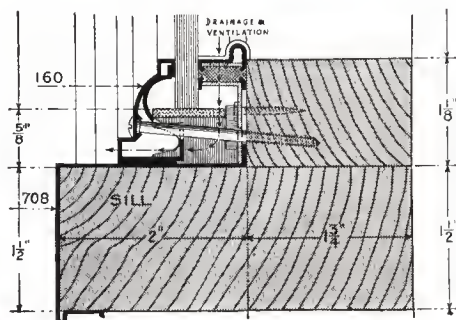
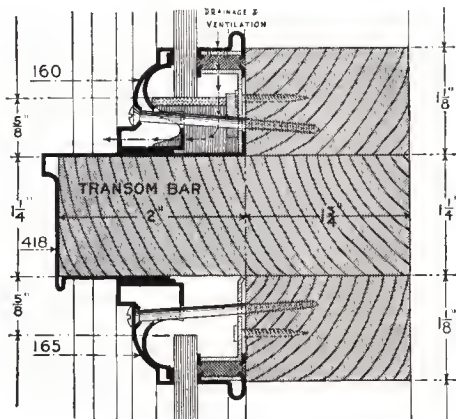
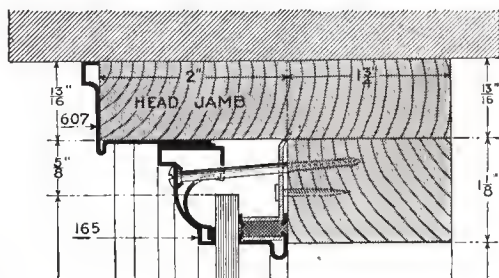
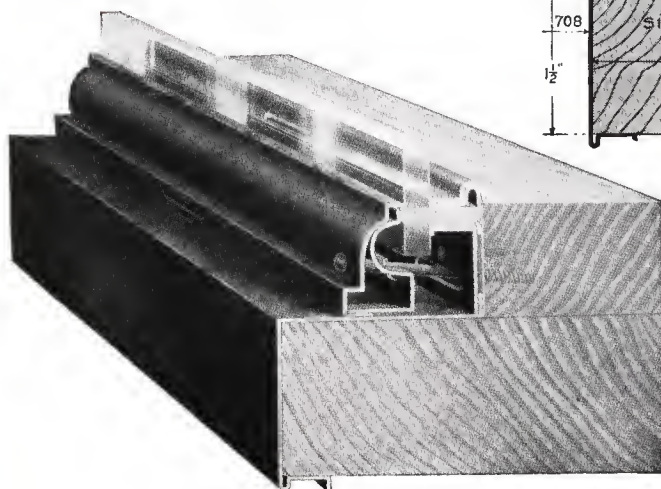


FEATURES

This cuts and detail show an all-metal type of sash and covering of a less expensive design than the standard type. It is designed primarily to meet the competition of direct screw pressure metal sash.

Detail
Vertical Section,
No. 160 and No. 165
Sash and Coverings.

No. 160 Sash
With No. 708 Sill Covering.



One-half Actual Size.



Where Lies the Danger in Setting a Big Plate of Glass

Note the illustration at the right. The arrows at (a) and (b) indicate the location of the setting blocks ordinarily used. The glass has been drawn into contact with the rabbet or inner moulding by the four serews, excepting where the glass rests on the setting blocks. Here the friction between the glass and the setting block prevents the glass from being drawn into contact with the rabbet. This distortion means trouble. It is almost inevitably the result when glass is set in the ordinary way.

Ordinarily the glaziers take the plate and lift it by means of straps onto two blocks. These blocks are placed about 14 inches from the ends of the plate of glass.

When this glass is set on the blocks, it must be kept away from the rabbet a sufficient distance to allow the withdrawal of the lifting straps.

The glaziers, if they are not using Self-Adjusting Setting Blocks, must lift the glass or the blocks by means of a pry, so as to get it into contact with the rabbet at the points where it sets on the blocks.

The weight and friction of a plate of glass are such that it will not slide on stationary blocks. It must, therefore, be *lifted* in order to move it into contact with the rabbet, but the glaziers frequently "forget" this part of the work, owing to the labor and risk of breakage in lifting the glass or the blocks with a pry. The result is that the glass is not in contact with the rabbet at the points where it sets on the blocks, but is sprung into contact with the rabbet on both sides of the block, when the outside moulding which holds the glass in position, is applied.

Though this distortion may not crack the glass at once, the fact that the glass is distorted means that it is an easy prey to wind pressure or other vibration. *How to prevent this distortion, see next page.*

(A) SETTING BLOCK.

(B) SETTING BLOCK.

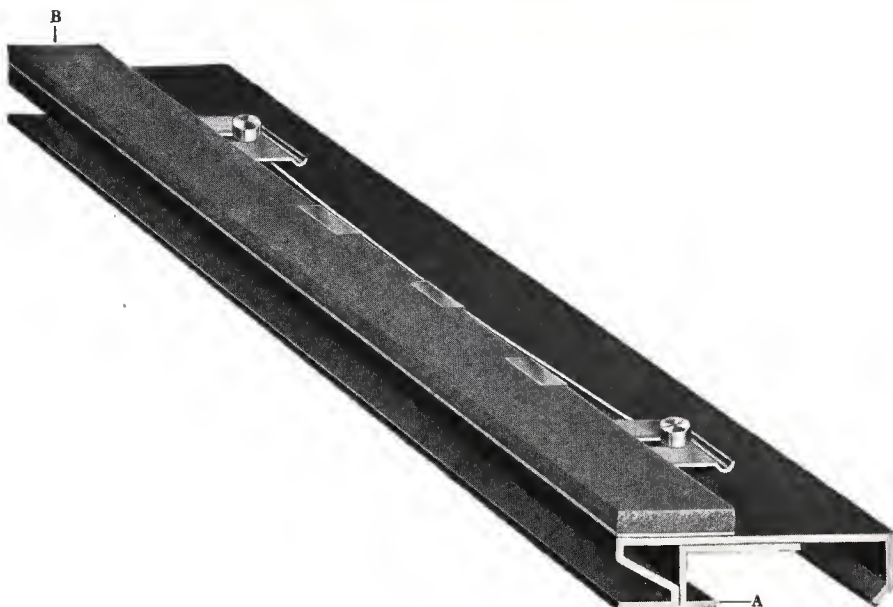


The above condition is impossible when Self-Adjusting Setting Blocks are used.



Self-Adjusting Setting Blocks Prevent Distortion

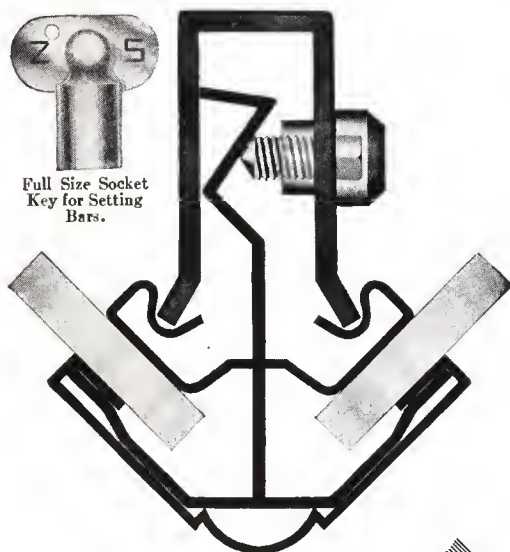
The Largest Source of Breakage



Self-Adjusting Setting Blocks, the cost of which is but a trifle, make distortion impossible. The glaziers set the plate of glass on the Setting Blocks in the usual way, and withdraw their straps. This Setting Block consists of two members. The base supports (a) is a substantial bronze stamping or sherridized steel casting. Resting on this is a sheet of bronze. On top of this sheet is riveted a leather cushion (b). The sheet of bronze forms an antifriction bearing with the stamping by means of which the glass is carried automatically into contact with the rabbet when the outside moulding is applied.

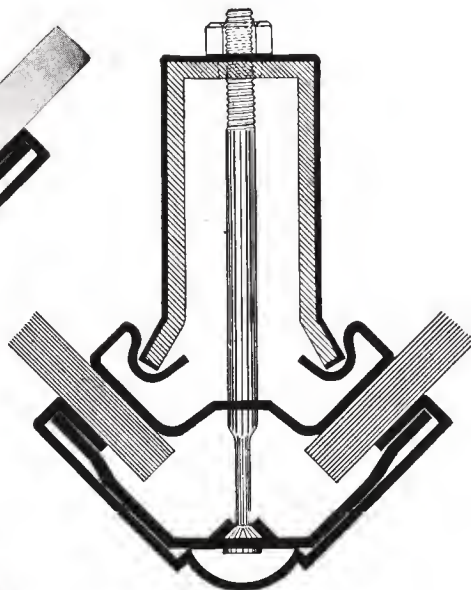


Full Size Socket
Key for Setting
Bars.



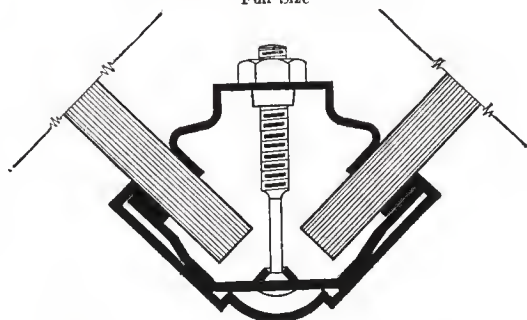
No. 200
Safety Key-Set Corner Bar.
Full Size

No. 212
Direct Screw Pressure
Corner Bar.
Not Key-Set.
Full Size.



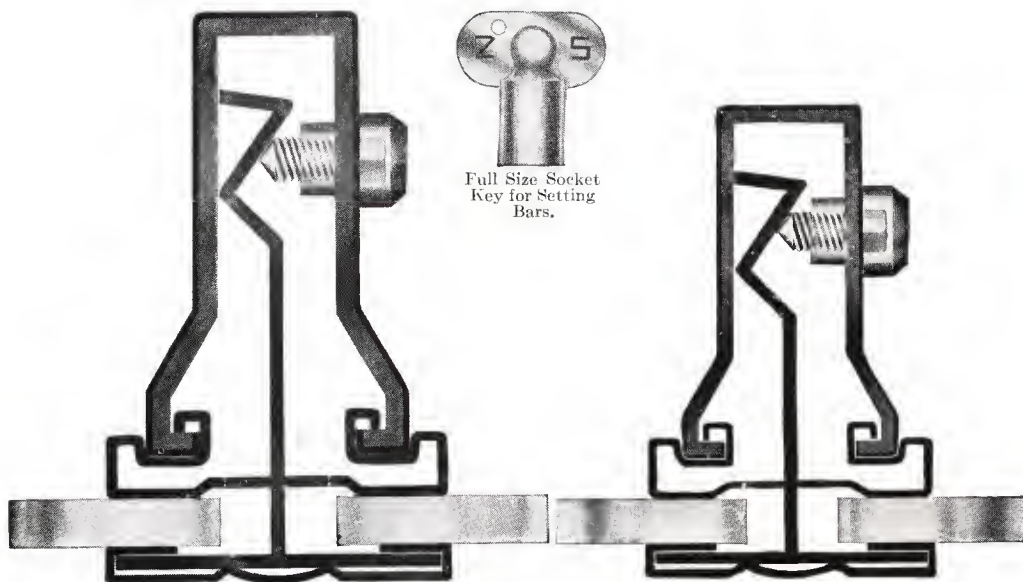
No. 202
Key-Set.
Direct Screw Pressure
Corner Bar.
For glass up to 108" high.
Full Size.

No. 2-A
Not Key-Set.
Direct Screw Pressure Corner Bar.
For glass up to 96" high.
Full Size



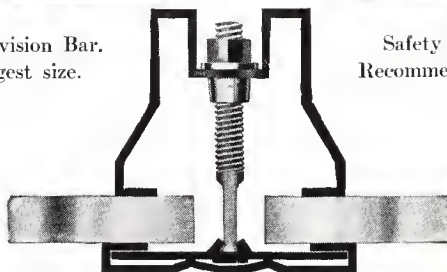
*These bars can be made in
practically any angle
desired.*

*When ordering always state
angle required.*

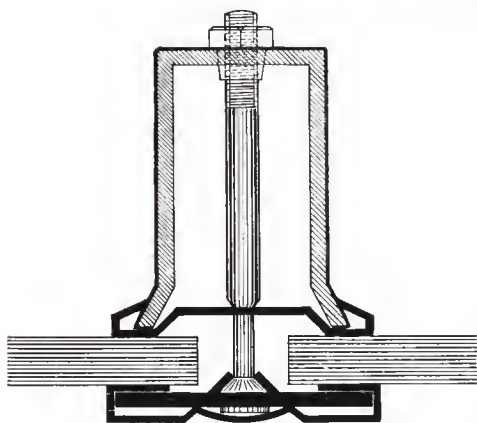


No. 300
Safety Key-Set Division Bar.
For glass of largest size.
Full Size.

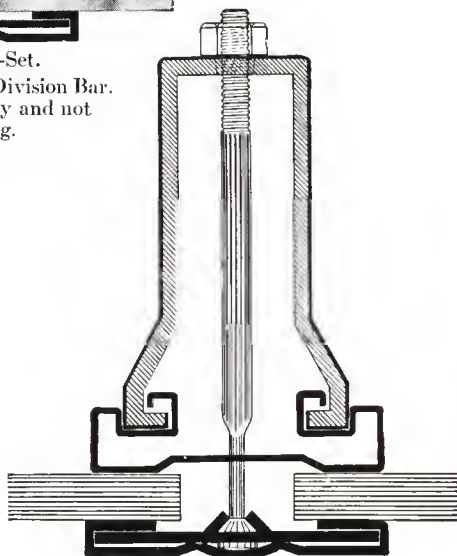
No. 301
Safety Key-Set Division Bar.
Recommended for Plate Glass up
to 108" high.
Full Size.



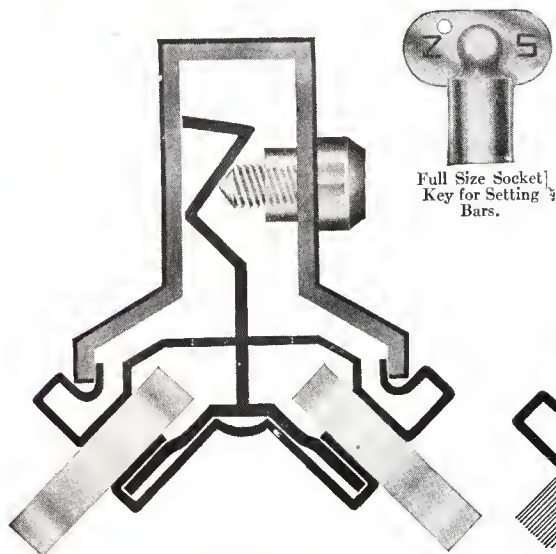
No. 302. Key-Set.
Direct Screw Pressure Division Bar.
For Transom use only and not
over 48" long.
Full Size.



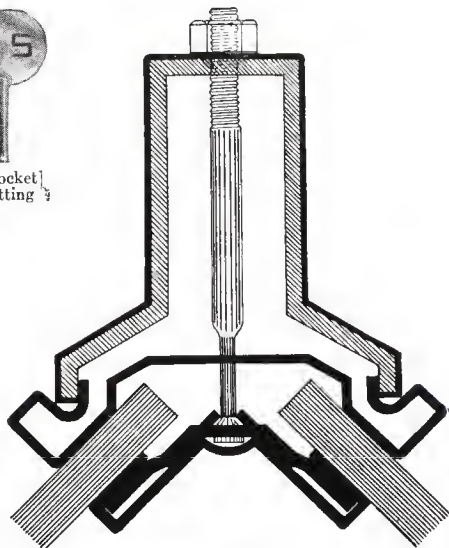
No. 314
Not Key-Set.
Direct Screw Pressure Division Bar.
Full Size.



No. 313
Not Key-Set.
Direct Screw Pressure Division Bar.
Full Size.

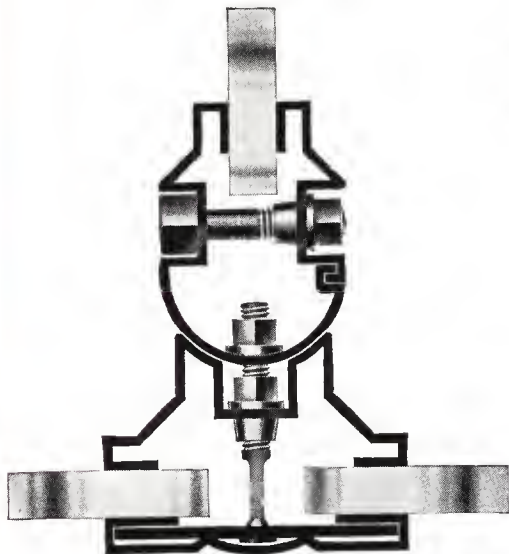


No. 201
Safety Key-Set Reverse Corner Bar.
For glass of largest size.
Full Size.

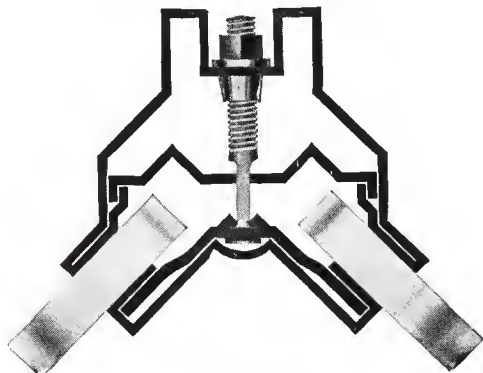


No. 213
Direct Screw Pressure Reverse Corner Bar.
Full Size.

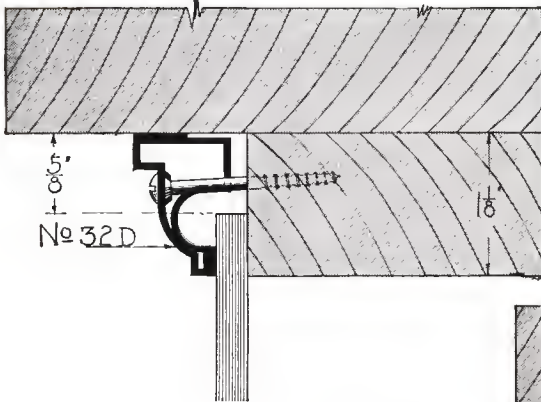
*These Bars can be made in practically
any angle desired.
When ordering always state angle required.*



No. 303
Key-Set.
Direct Screw Pressure Adjustable Three-Way Bar.
Full Size.



No. 203
Key-Set.
Direct Screw Pressure Reverse Corner Bar.
For glass up to 108" high.
Full Size.

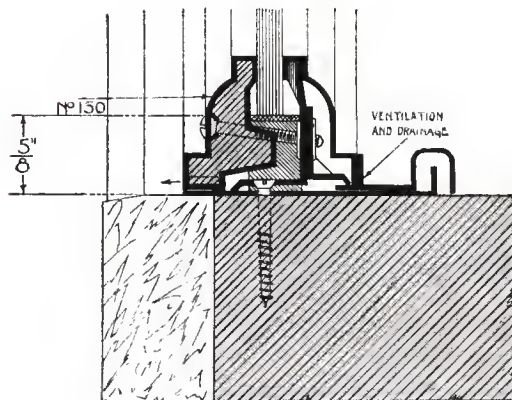
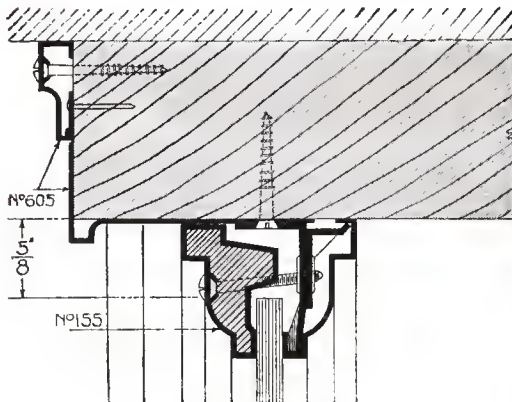


No. 32D

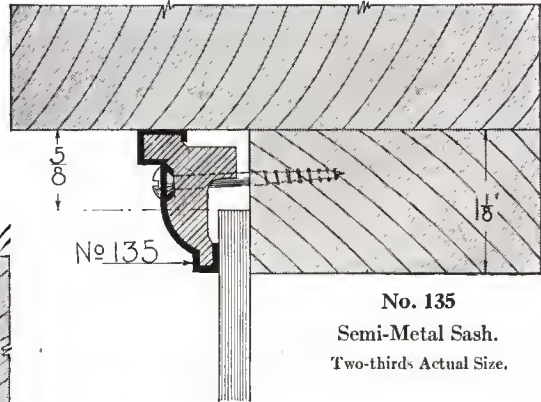
Sash.

Two-thirds Actual Size.

No. 150 and No. 155
Direct Screw Pressure Sash.
For both inside and outside setting.



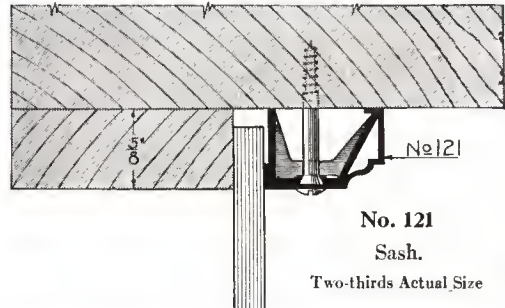
Two-thirds Actual Size



No. 135

Semi-Metal Sash.

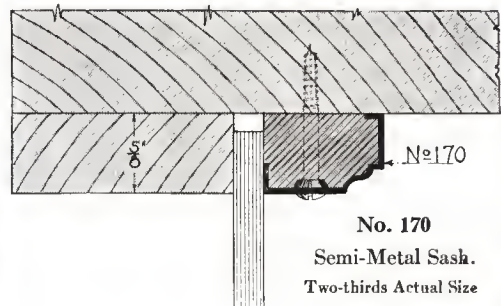
Two-thirds Actual Size.



No. 121

Sash.

Two-thirds Actual Size



No. 170

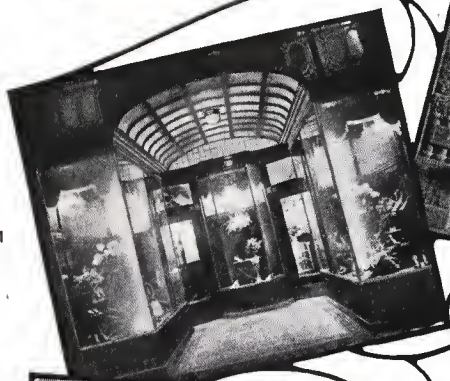
Semi-Metal Sash.

Two-thirds Actual Size

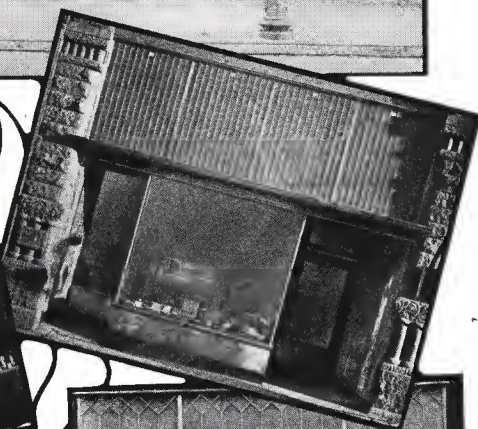
20



21



22



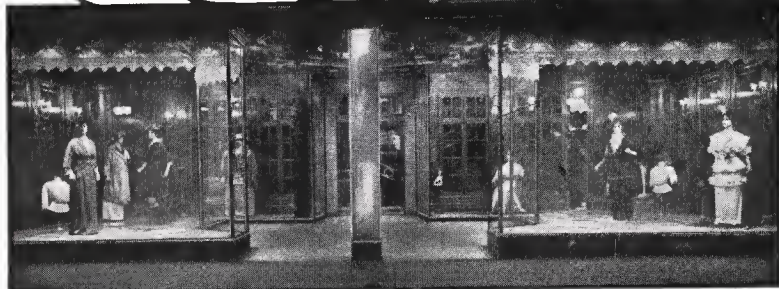
23



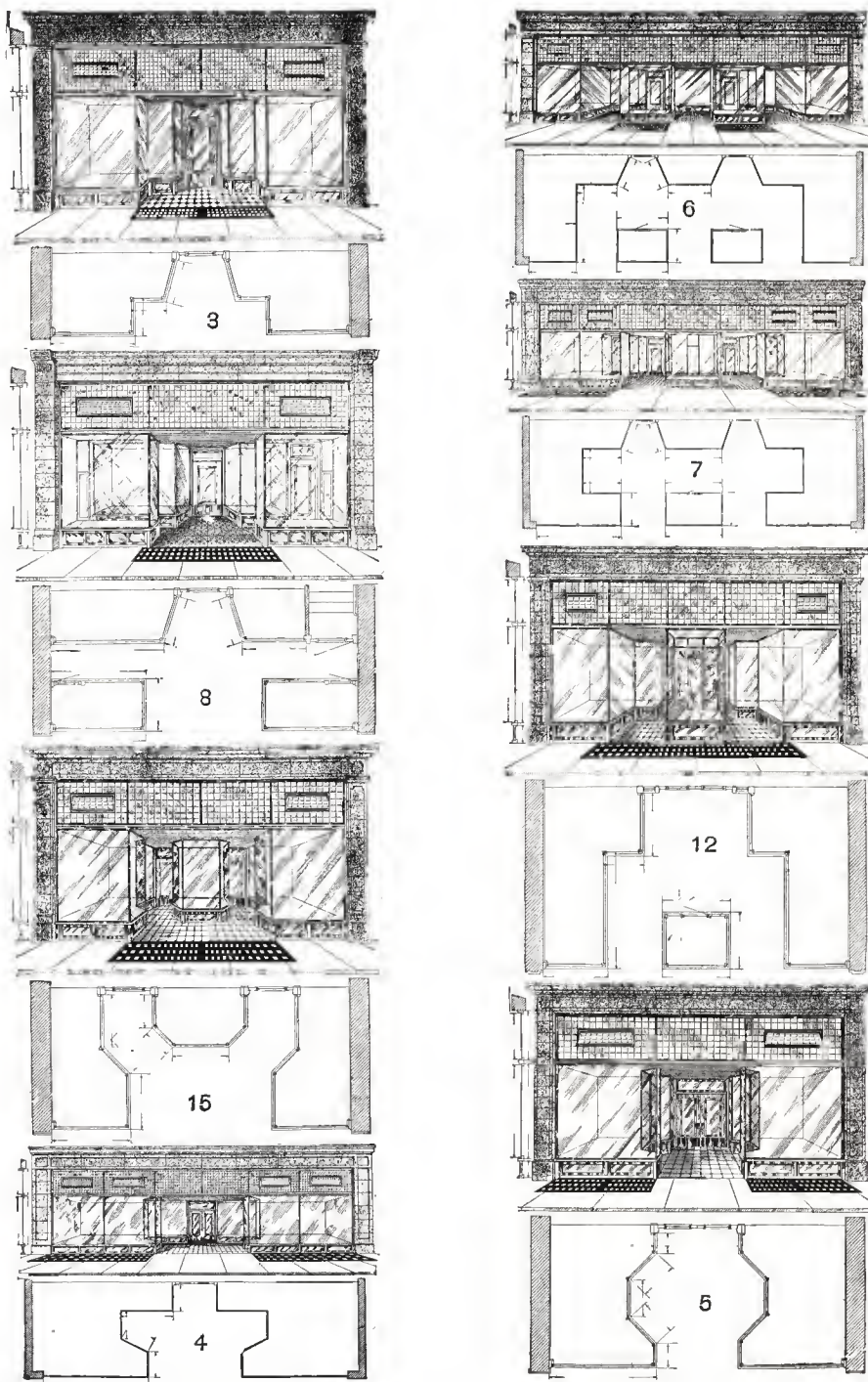
24



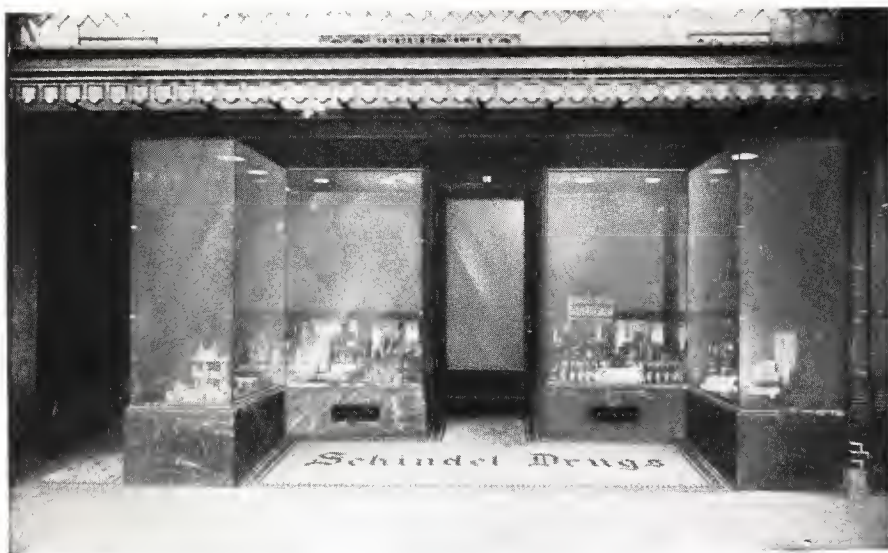
25



"ZOURI-LIGHTHOUSE" STORE FRONTS
(Use Numbers for Reference)



When writing in reference to above Designs of "Zouri-Lighthouse" Store Fronts,
kindly refer to numbers.



*“Lighthouse” Quality
Patent
All Glass Store Fronts*

DESIGNED to obtain the maximum amount of unobstructed display.

PRINCIPLE—The corners of the glass are held with clamps of either the Crane type or the American Expansion type. For illustration of these clamps the principle on which they operate see pages 147 and 148.

METAL SASH is used on this type of front at the sill, head and side of the plate glass. Only the corner and reverse corner bar are omitted.

A SAFE and practical design and can be made to accommodate any style of modern store front.



“Lighthouse” Quality Store Front Awnings

*Equipped with Anton Lateral Arms. For all styles
and sizes of Store Fronts*

IMPROVEMENT in Store Front Architecture brought about a demand for better awnings. Awnings were desired that could be swung from the transom bar so that they would not interfere with, or shut out, the light giving qualities of the prism glass in the transom above.

ANTON LATERAL ARMS solved this problem. They are fastened to the transom bar and work on the principle of a man's arm, having a middle joint corresponding to the elbow.

CONCEALED—When the awning is rolled up the arms lie flat against the transom bar. The awning and mechanism is all protected under the Awning Transom Hood shown on page 133.

COST—Awnings equipped with Anton Lateral Arms are moderate in price and compare favorably with other designs in cost.



No. 6 Anton Lateral Awnings



These cuts show the appearance of the lateral arms and the principle on which they work.

Designs for Open Transom Bar Construction.

Stock Sizes—Made in Three Lengths

No. 6 Anton Lateral Arm, 7 ft. long, weight 26½ lbs., slant 8 ft. 2 in.

No. 6 Anton Lateral Arm, 7 ft. 6 in. long, weight 32½ lbs., slant 8 ft. 6 in.

No. 6 Anton Lateral Arm, 8 ft. long, weight 34½ lbs., slant 9 ft. 6 in.

Old Style



The old style awning shuts out all daylight. Awnings equipped with Anton Lateral Arms swinging from the Transom Bar give you maximum value from your investment.

Special Designs

Made for all styles and sizes of store fronts.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

GLASS
ACCESSORIES

Pages one hundred forty-seven to one hundred fifty-five



“Lighthouse” Quality Patent Fasteners for all Glass Fronts

American Expansion Fasteners For Patent Fronts

EXCLUSIVE FEATURES

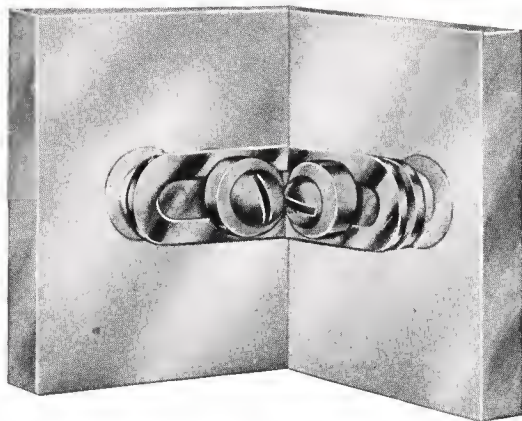
1. **Protection** from strains afforded to each drilled hole in the glass plate.
2. **Adjustability** of the glass plates with respect to one another.
3. **Accommodation** for variation in the position of any two registering holes.
4. **Non-deteriorating** cushioning means no rubber to harden and fall out.
5. **Convenience** with which the parts are assembled.
6. **Non-corrosive** nature of the materials. All parts of Brass or German Silver, highly finished, and unaffected by dampness.
7. **In ordering** be sure to give angle and to state which is front plate.

THE SLOTTED BINDING-PLATE

Corresponding, in function, to the safety-valve of the steam-boiler, it automatically provides a means of relief for expansive forces.



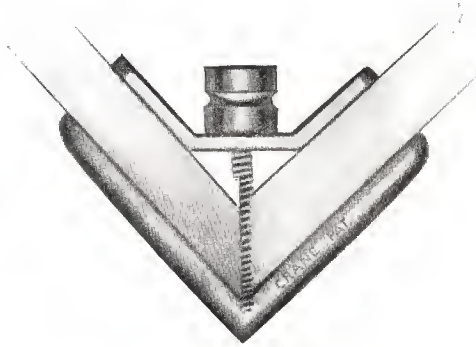
Front View.



Back View.



“Crane” Patent Front Clamps



Sectional View.

Instructions for Setting Glass with the Crane Patent System

DETERMINE ANGLE—This glass is mitered to required angle, therefore extreme care should be exercised in determining angle.

TO INSTALL—Place the glass in the window opening and adjust same to bring the mitered edges close and evenly together, using small wood blocks under the glass and also at the back vertical edges, to keep the glass in position. Care should be taken not to chip the edges of the glass.

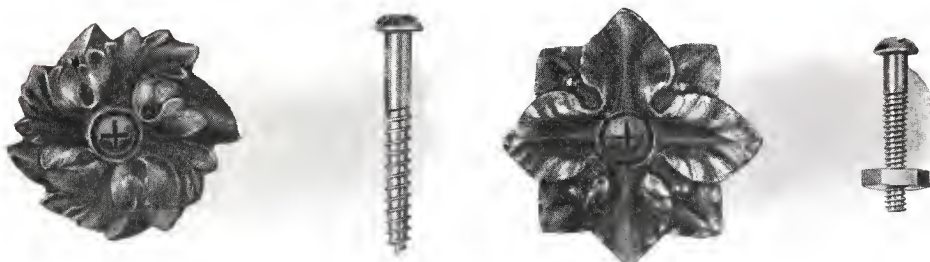
PUT ON THE MOULDINGS that are to hold the glass in place and fill the mitered joint with black cement or putty.

PLACE THE CLAMP in the proper position at the notched openings, using a little cement or putty between the members of the clamp and the glass; screw the parts together firmly but not too tight, and clean away all surplus cement.



Rosettes

For Use with Miter Cut Mirrors



Furnished with either bolt or screw heads.



Glass Head Screws

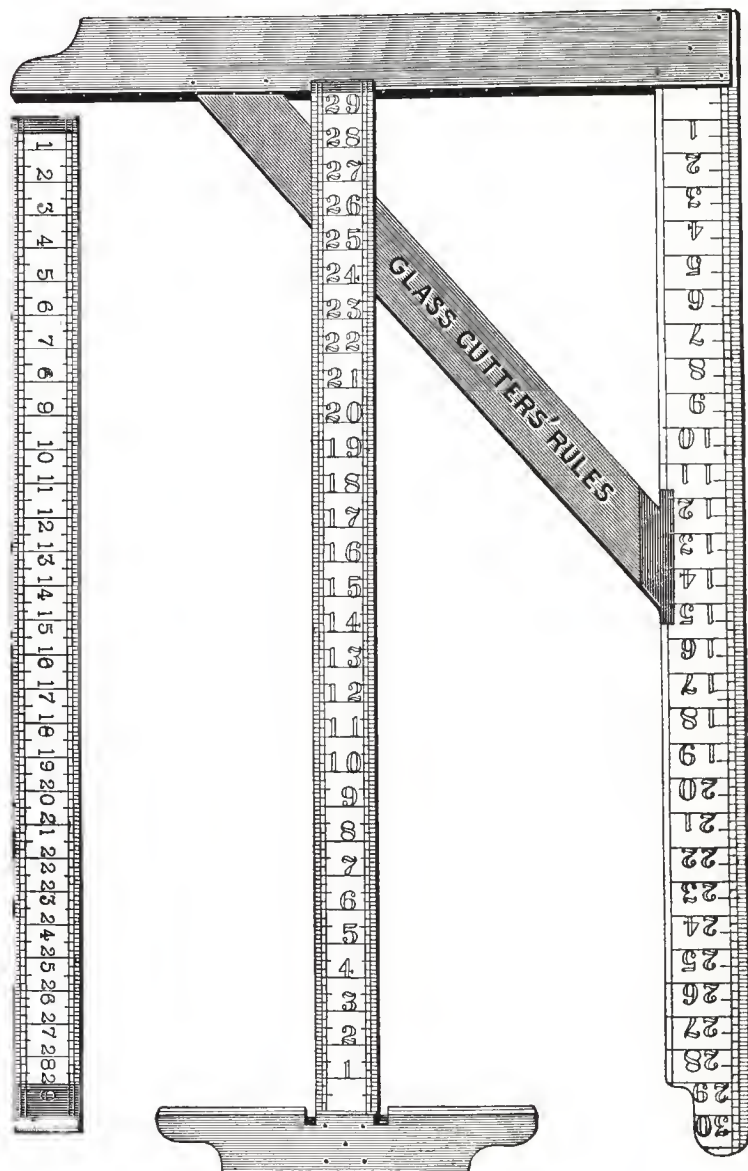
With detachable glass heads. Useful and Ornamental.



Shelf Brackets

Information and prices concerning any style furnished on request.

All leading styles and sizes.

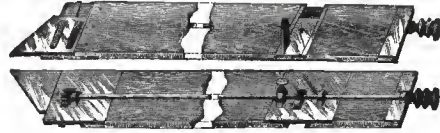
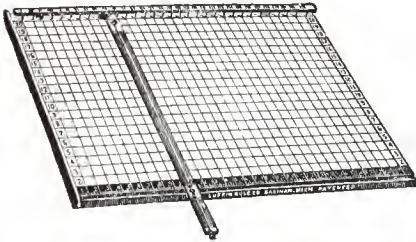


Glass Cutters' Rules

Of all kinds and descriptions.



"Perfection" Glass Boards

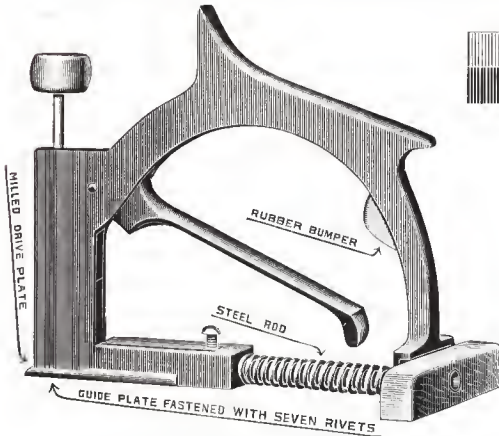


Cut showing upper and lower side of rule.

The rule is fitted with a very simple device by which it can be moved forward and backward and readily set for cutting fractions of inches. When several lights of glass of the same size are to be cut, and the screw is once set, every one will be of exact size.

Size of boards, 24 x 36 30 x 48 36 x 54 42 x 60 48 x 72

Drivers and Sprigs and Glazing Points



Diamond Points

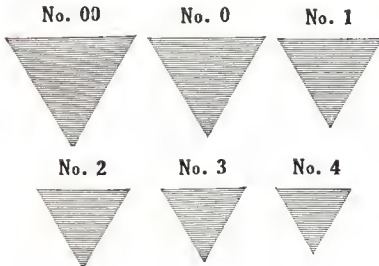
In boxes containing:—
No. 1—9000 points per pkg.
5 pkgs. per box.
No. 2—5000 points per pkg.
5 pkgs. per box.

For Glazing Sash

Saves time and money. Simple, cheap, easy to handle.

No. 1— $6\frac{3}{4}$ " long for No. 1 Sprigs.

No. 2— $8\frac{1}{2}$ " long for No. 2 Sprigs.

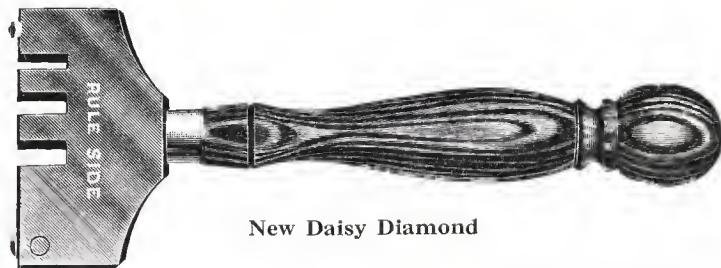


Triangle Points

These points are guaranteed to be the flattest, smoothest and cleanest cut manufactured. The square driving edges make them easy to drive and reduce the hazard of glass breakage to a minimum. They are demanded by practical glaziers everywhere. Furnished in half pound packages.



Diamond Glass Cutters



New Daisy Diamond

Any one can cut with this diamond. Only made in one quality.



Can be furnished with 1, 2, or 3 points.

Wheel Glass Cutters



No. 024. Original "Red Devil" Glazier's Tool.



No. 023. "Red Devil" for Plate, Cathedral Figured or Ribbed Glass.



No. 7. New "Red Devil" "Six Wheel Turret" Head Cutter.



Standard Glass Cutter

No. 295. A good household tool with putty knife.



"Red Devil" Trimming Pliers



Made of malleable iron with tool steel jaws inserted.

No. 510— $8\frac{3}{4}$ " long, width of jaw $\frac{11}{16}$ " for $\frac{1}{4}$ " plate.

No. 510— $10\frac{1}{4}$ " long, width of jaw $\frac{13}{16}$ " for $\frac{1}{2}$ " plate.

Glass Rollers



No. 610 Heavy, length 12".

Putty Knives



No. 464. "Red Devil" Putty Knife.

Stiff blade, cocobola handle, Babbit bolster, $1\frac{1}{4}$ " x $3\frac{1}{2}$ ".



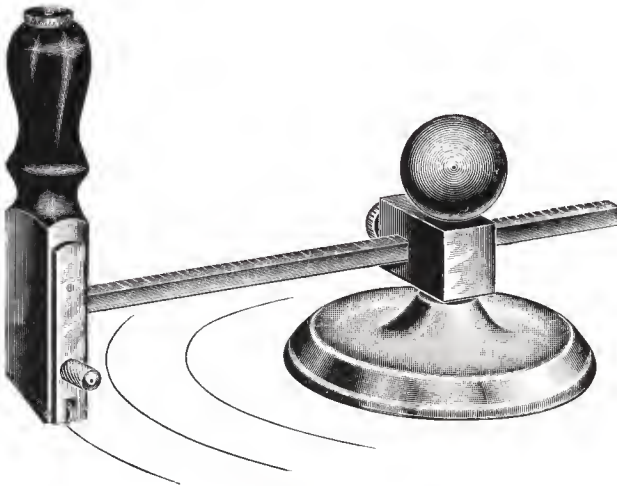
No. 462. "Red Devil" Putty Knife.

Stiff blade, beachwood handle, $1\frac{1}{4}$ " x $3\frac{1}{2}$ ".



No. 263. "Red Devil" Circular Glass Cutter.

Cuts circles 2" to 82". Rod graduated. All metal base.

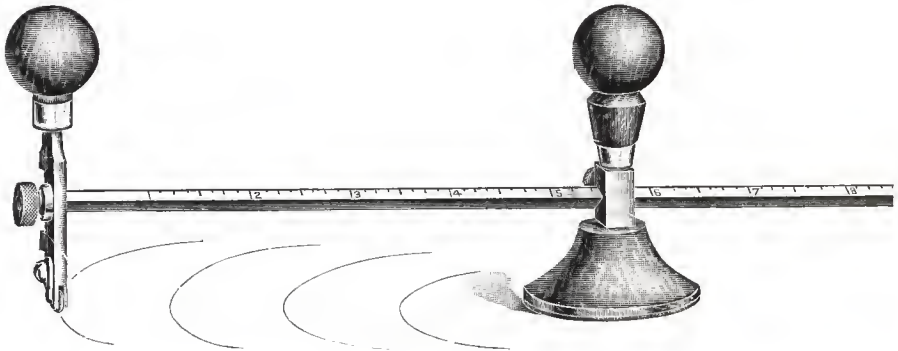


Acme Circle Cutter

This is our best square rod nickel plated Circle Cutter. Thumb piece does not revolve. Interchangeable head for renewing cutters, secured firmly to graduated rod marked with $\frac{1}{8}$ inches. Movable base, instantly adjusted to measurements on rod from side of post. Rubber bottom. Packed one in a box. Complete with 12 extra wheels and axles.

Acme, 12 in. rod, complete, cuts circles from 3 to 23 inches.

Acme, 31 in. rod, complete, cuts circles from 3 to 61 inches.

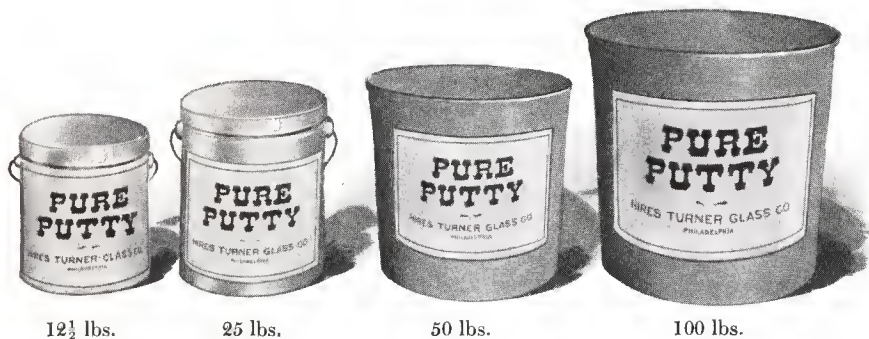


Rex Circle Cutter

To meet the growing demand for a dependable Circle Cutter at a medium price. Hardwood handles and base with felt covered bottom.

The cutter head is interchangeable, allowing for renewing of cutters, and is secured firmly to the graduated rod marked with $\frac{1}{8}$ inches.

All metal parts nickel plated. Cuts circles from $2\frac{1}{2}$ to $22\frac{1}{2}$ inches.



12½ lbs.

25 lbs.

50 lbs.

100 lbs.

Putty

12½ and 25 pound cans.

50 and 100 pound buckets, and barrels containing about 600 lbs.

Steel Sash Putty

Red or Natural

Furnished in barrels or 100 pound buckets.

HIRES TURNER



GLASS COMPANY



“Lighthouse” Quality

LEADED
ART AND BEVELED
GLASS

Pages one hundred fifty-seven to one hundred seventy

The designs shown on pages 159 to 170 are copyrighted, 1914, by the National Ornamental Glass Manufacturers' Association of the United States and Canada.



Art Glass

Description

Art Glass is purely and simply a quality product, the cost of which varies materially according to the time required to make up and the quality of materials used. In short, as the name implies, the price is based upon the nature of the work rather than the actual value of the glass employed in it. We much prefer that in all cases, our customers inform us of the approximate price they desire to pay, when we will submit designs showing what can be furnished for the money.

WHEN ORDERING LIGHTS from this catalogue give the number of designs.

NEVER CUT OUT THE DESIGNS. All windows are made to order to size given.

IN ORDERING give the maximum time, otherwise will assume that we will have 30 days to fill orders.

In ordering mention width first—upright lights thus  18 x 60 or transom thus  60 x 18.

WHEN SELECTING a design compare the size and shape of glass wanted with the size and shape of designs. Have them as nearly alike as possible.

WHEN LIGHTS are ordered to fill a smaller space or of a different shape than indicated in design, we reserve the right to modify the design or increase the price.

FOR ODD SHAPES or sizes send in full size paper patterns. Windows that are grouped draw a rough plan showing how they go.

ODD OR FRACTIONAL parts of inches charged as even inches of next larger size, for example a $22\frac{1}{2}$ x $23\frac{1}{4}$ will be charged as 24 x 24. All sizes under 3 sq. ft. will be charged at the rate of 3 sq. ft. Lights measuring less than 12 inches in height or width will be charged at the rate of 12 inches high or wide.

ALL DESIGNS in this catalogue are scaled approximately $\frac{3}{4}$ inch to the sq. ft.

FOR EXTRA WIDE or heavy leading additional prices will be charged.

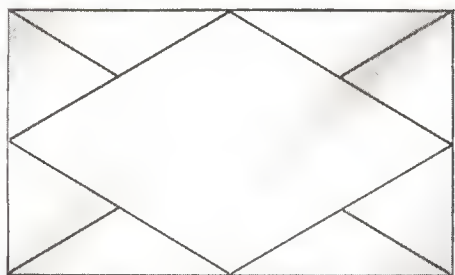
VENTILATORS—prices are based on steel double ventilators of standard make.

INSCRIPTIONS—containing not over 36 letters—additional letters will be charged extra.

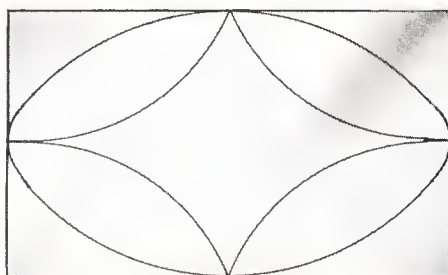
Special Note—Designs showing colored glass our artist will use such glass and colors as in his judgment will be best adapted to carry out the designs. Designs not showing color can be made in color and in harmony with any design shown in colors or suiting any taste or color scheme desired.



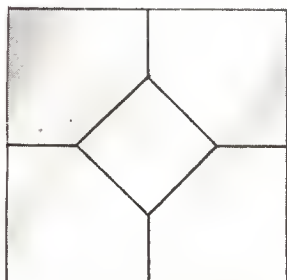
Attractive design of beveled plate glass set in hard metal for modest requirements.



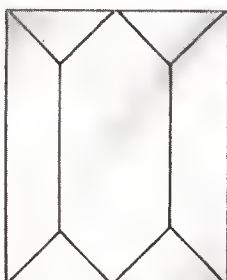
1009. \$0.85 square foot



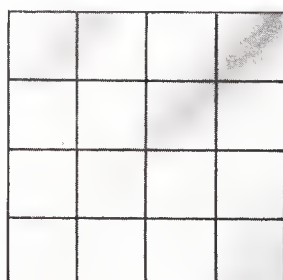
1010. \$1.20 square foot



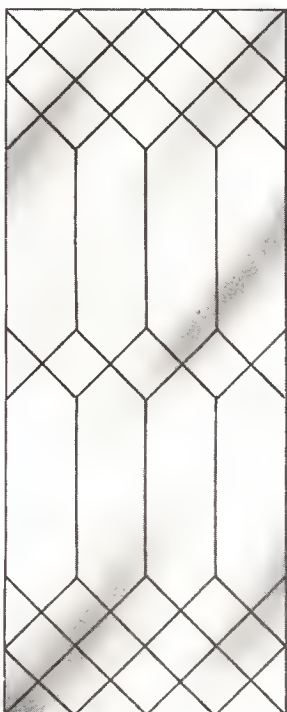
1011. \$0.85 square foot



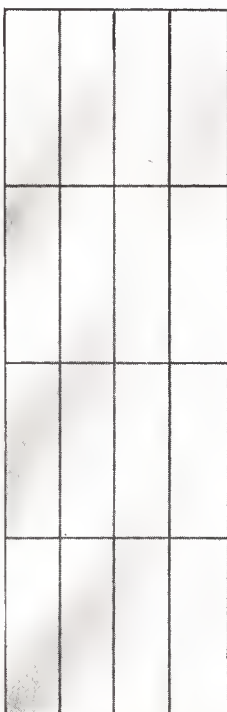
1012. \$0.90 square foot



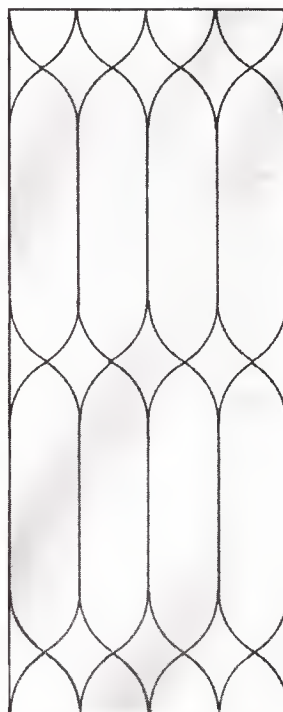
1013. \$1.00 square foot



1014. \$1.15 square foot

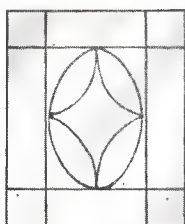


1015. \$0.90 square foot

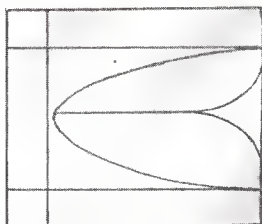


1016. \$1.50 square foot

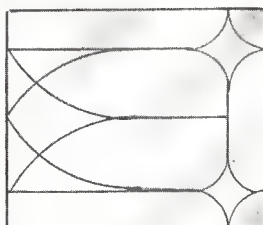
LEADED CLEAR GLASS



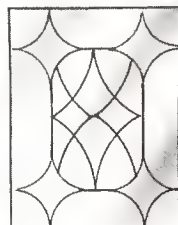
1050. \$1.35 sq. ft.



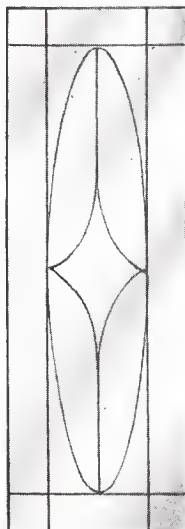
1051. \$1.35 sq. ft.



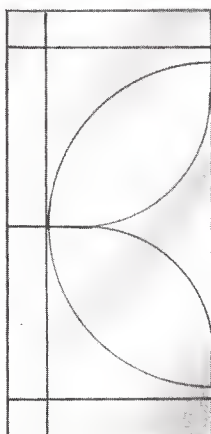
1052. \$1.50 sq. ft.



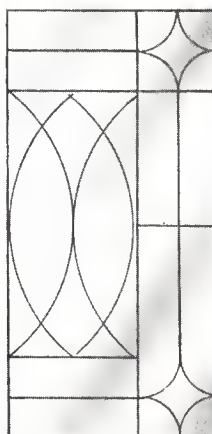
1053. \$1.50 sq. ft.



1054. \$1.35 sq. ft.



1055. \$1.35 sq. ft.



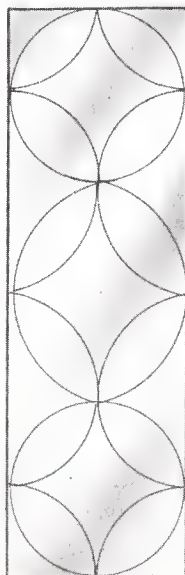
1056. \$1.50 sq. ft.



1057. \$1.50 sq. ft.



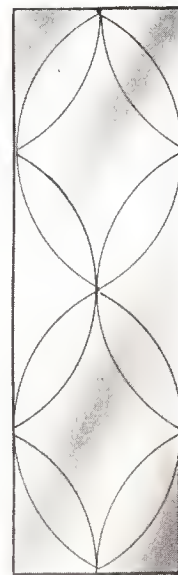
1058. \$1.20 sq. ft.



1059. \$1.50 sq. ft.

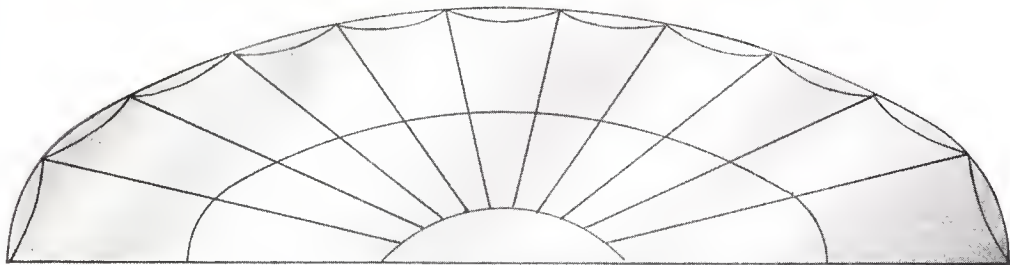


1060. \$1.30 sq. ft.

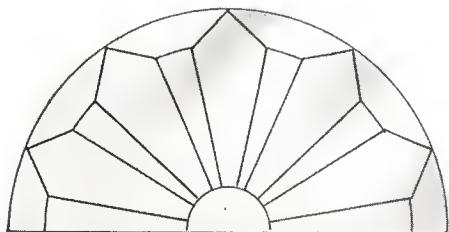


1061. \$1.40 sq. ft.

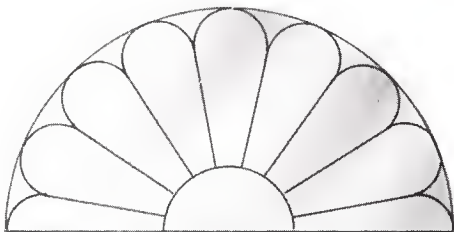
LEADED CLEAR GLASS



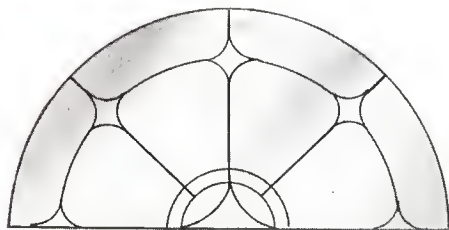
1062. \$1.50 square foot



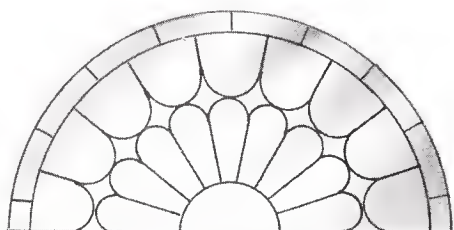
1063. \$1.50 square foot



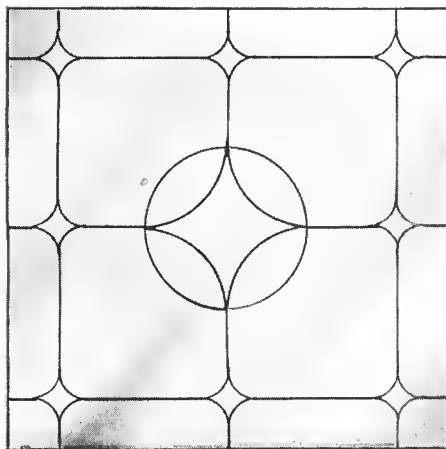
1064. \$1.60 square foot



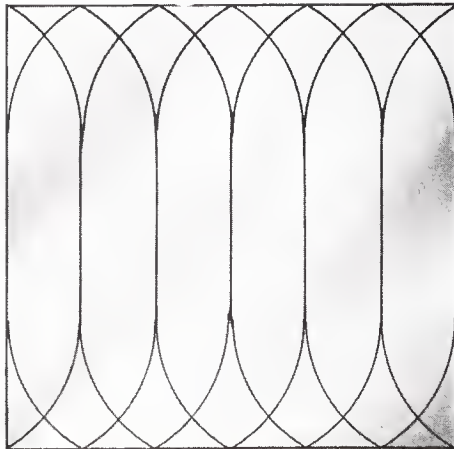
1065. \$1.50 square foot



1066. \$2.00 square foot



1067. \$1.50 square foot

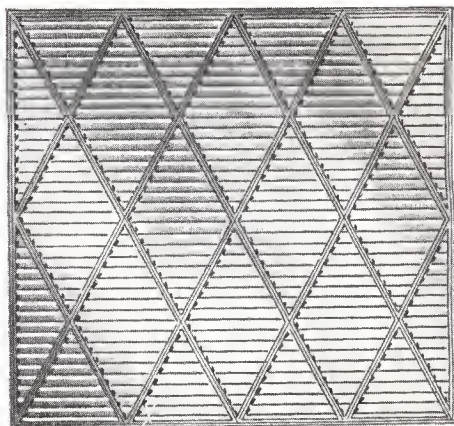


1068. \$1.40 square foot

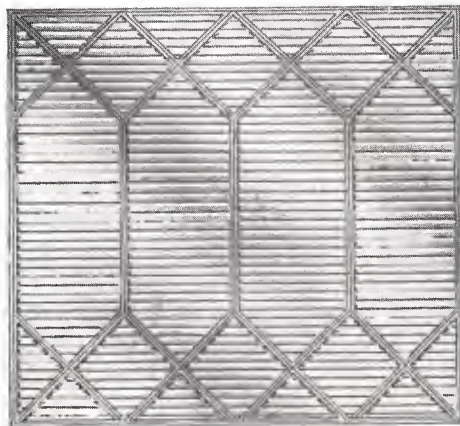
LEADED CLEAR GLASS



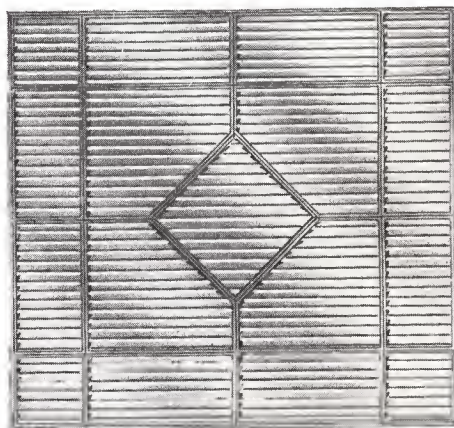
1099. \$1.50 square foot



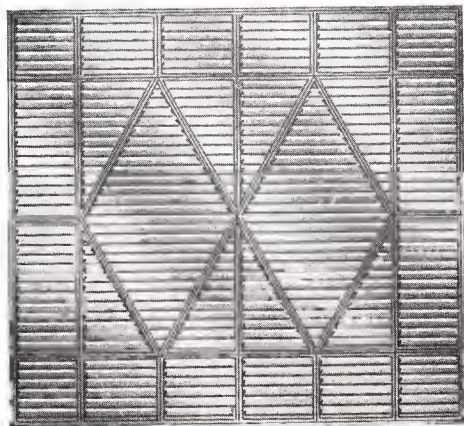
1100. \$1.60 square foot



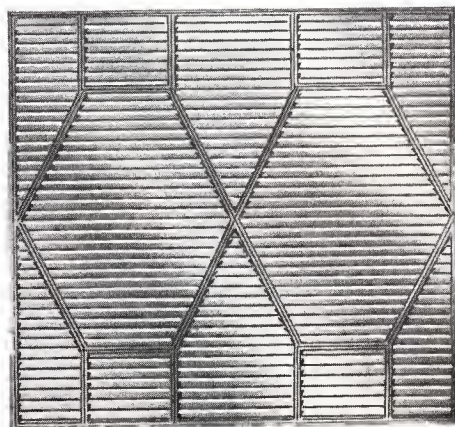
1101. \$1.75 square foot



1102. \$1.60 square foot



1103. \$1.80 square foot



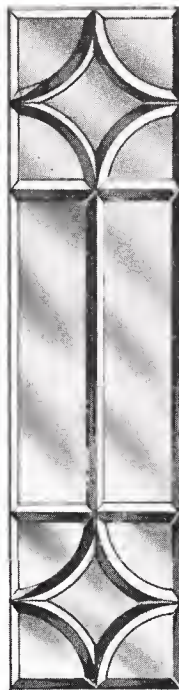
1104. \$1.60 square foot



1145. \$3.40 sq. ft.



1146. \$3.75 sq. ft.



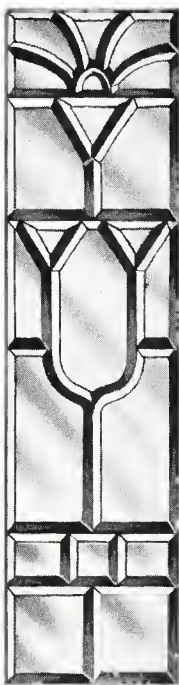
1147. \$2.80 sq. ft.



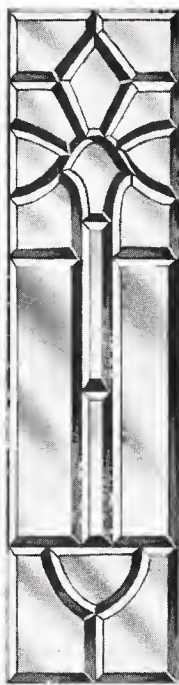
1148. \$3.40 sq. ft.



1149. \$3.75 sq. ft.



1150. \$3.75 sq. ft.



1151. \$3.40 sq. ft.

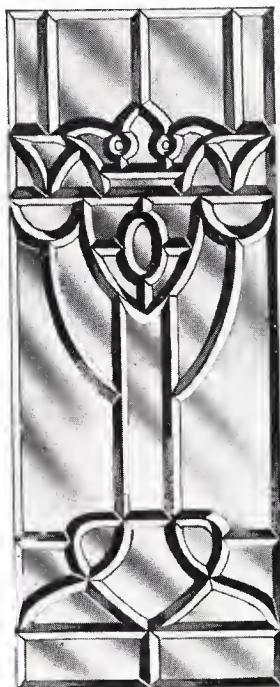


1152. \$3.75 sq. ft.

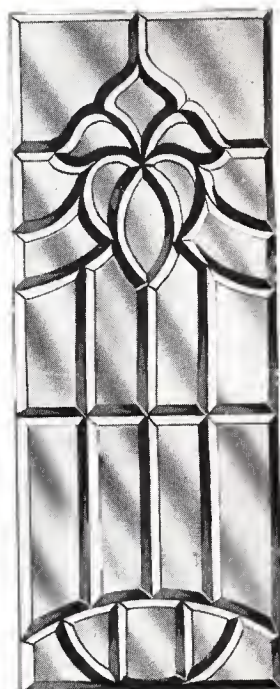
LEADED CLEAR BEVELED PLATE GLASS



1220. \$3.75 square foot



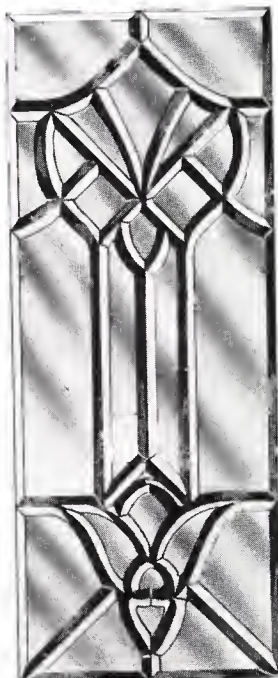
1221. \$4.40 square foot



1222. \$3.75 square foot



1223. \$3.75 square foot



1224. \$3.75 square foot

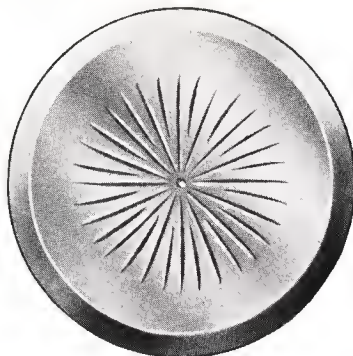


1225. \$3.40 square foot

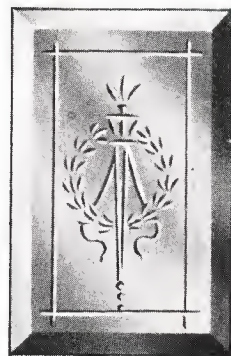
LEADED CLEAR BEVELED PLATE GLASS



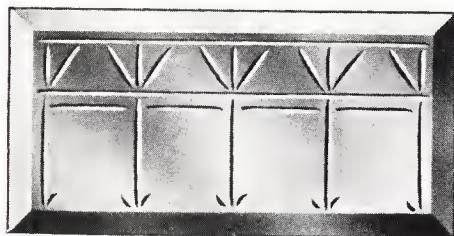
1230. \$3.15 square foot



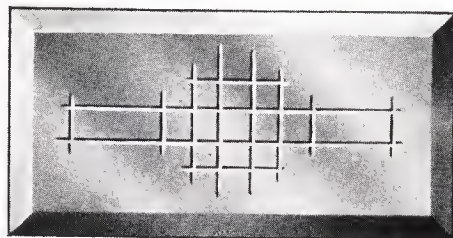
1231. \$3.15 square foot



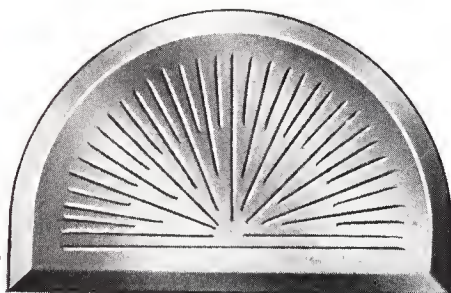
1232. \$4.40 square foot



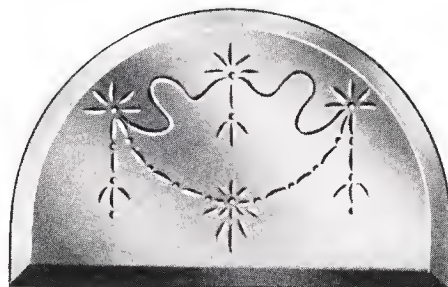
1233. \$3.15 square foot



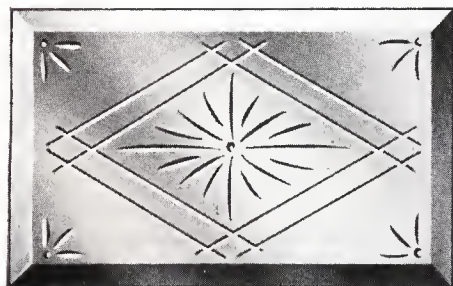
1234. \$3.15 square foot



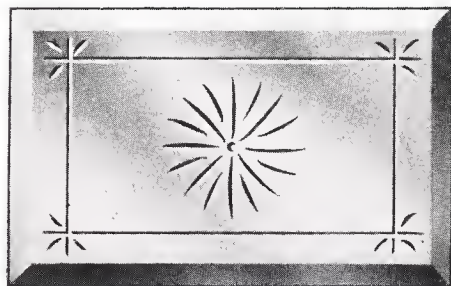
1235. \$3.75 square foot



1236. \$3.40 square foot

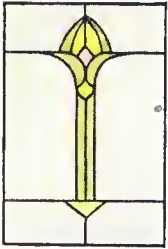


1237. \$3.75 square foot

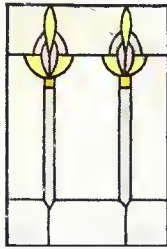


1238. \$3.40 square foot

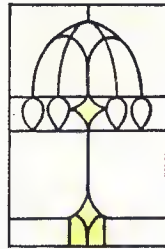
BEVELED MITRED AND WHEEL CUT POLISHED PLATE GLASS



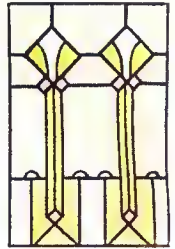
1258. \$1.25 sq. ft.



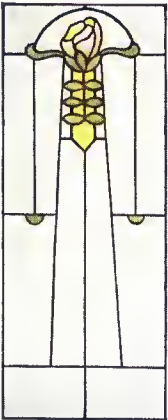
1259. \$2.00 sq. ft.



1260. \$2.25 sq. ft.



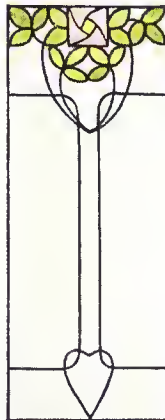
1261. \$3.10 sq. ft.



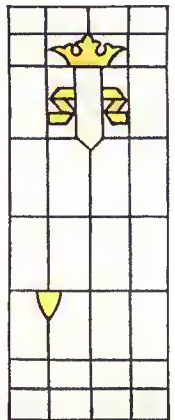
1262. \$2.75 sq. ft.



1263. \$2.50 sq. ft.



1264. \$2.75 sq. ft.

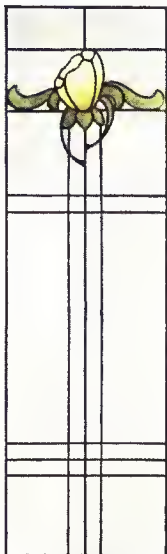


1265. \$2.25 sq. ft.

1266. \$3.10 sq. ft.



1267. \$2.75 sq. ft.



1268. \$3.10 sq. ft.



1269. \$2.50 sq. ft.



LEADED CLEAR WITH COLORED DECORATION



1294. \$2.00 square foot



1295. \$1.90 square foot



1296. \$2.60 square foot



1297. \$2.00 square foot



1298. \$1.80 square foot

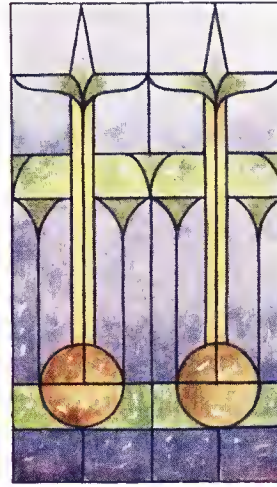
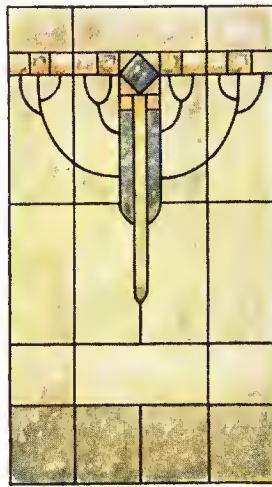
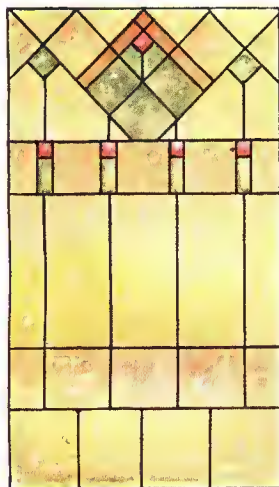


1299. \$1.70 square foot

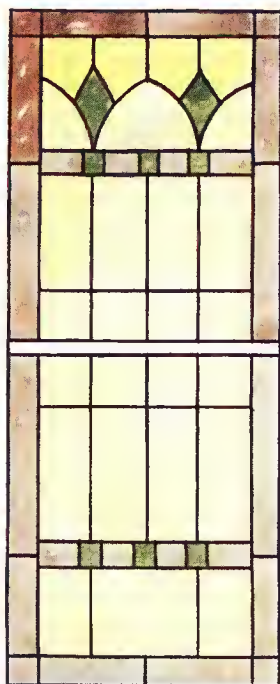
1300. \$1.75 square foot

1301. \$2.10 square foot

1302. \$2.00 square foot



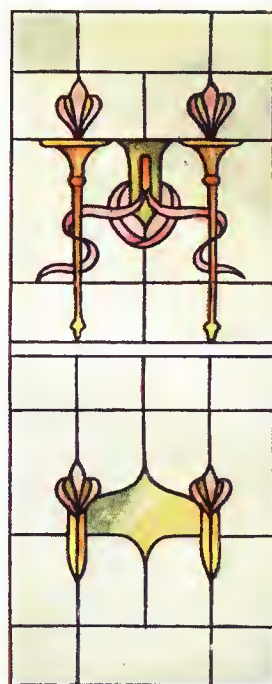
LEADED COLORED GLASS



1317. \$1.65 square foot

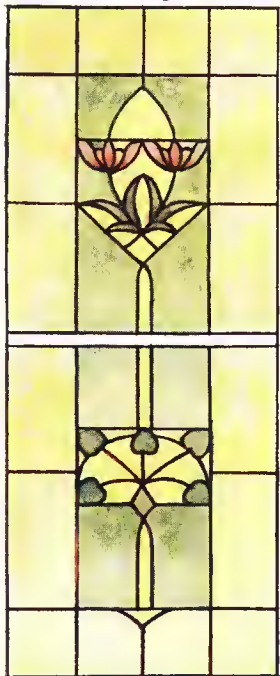


1318. \$2.40 square foot



1319. \$3.40 square foot

1320. \$3.00 square foot



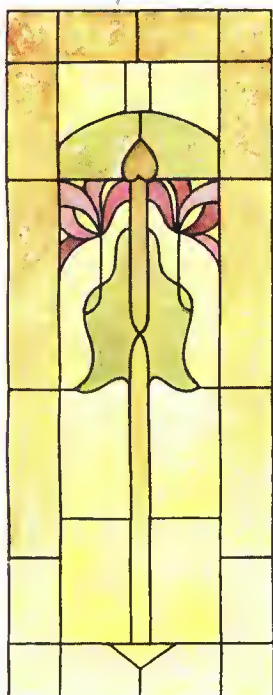
1321. \$3.10 square foot



1322. \$2.75 square foot

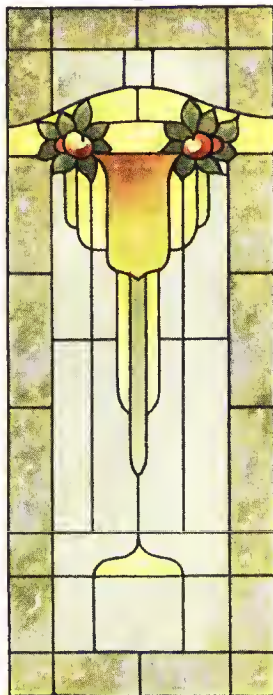


LEADED COLORED GLASS



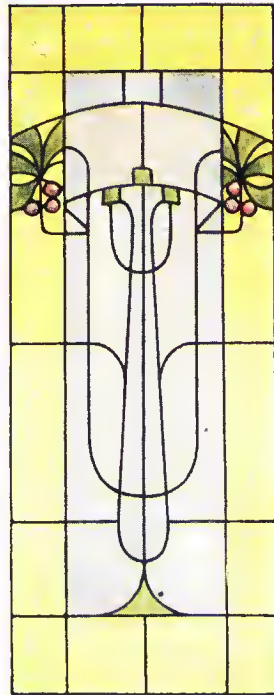
1337. \$2.40 square foot

1340. \$2.75 square foot



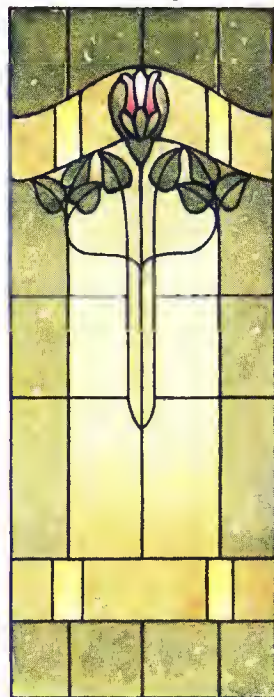
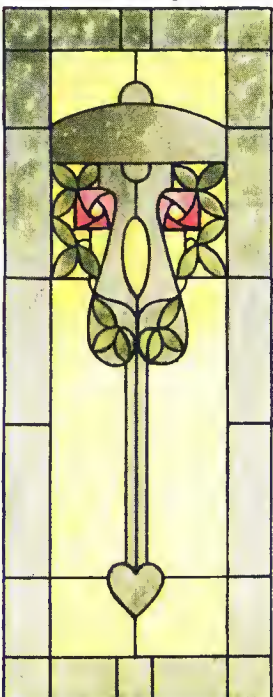
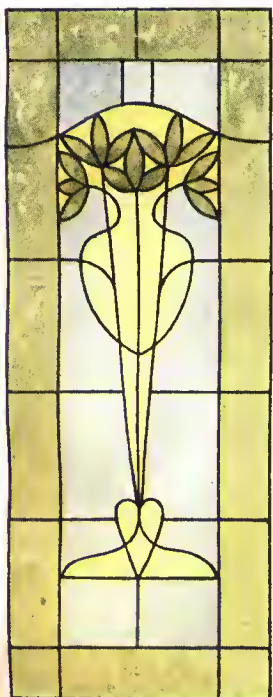
1338. \$2.85 square foot

1341. \$3.10 square foot

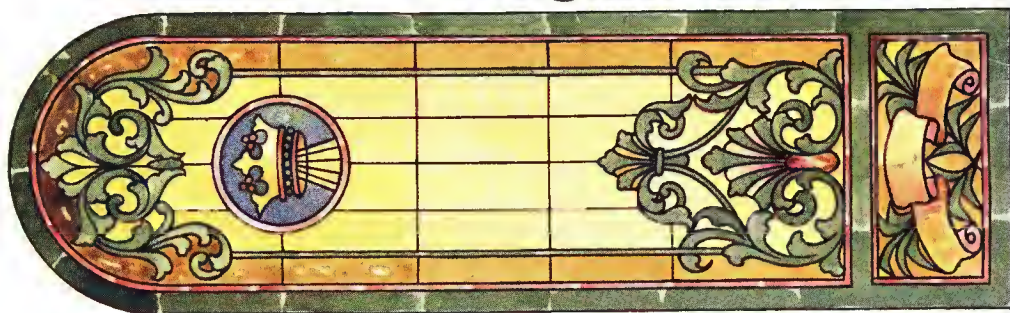


1339. \$2.90 square foot

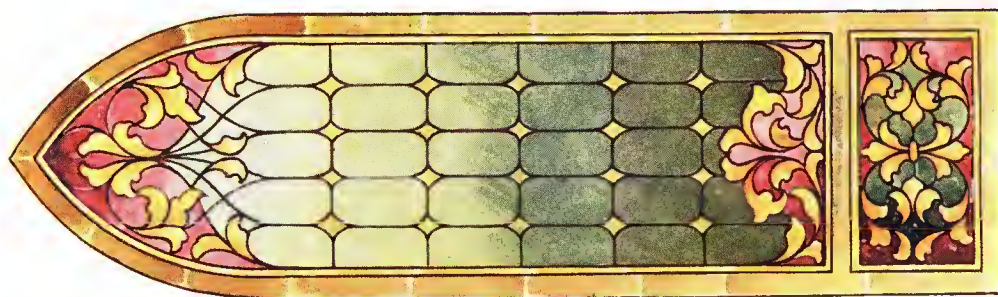
1342. \$3.00 square foot



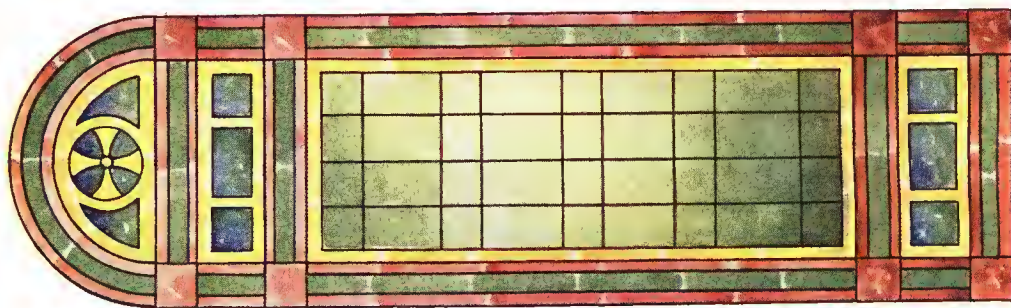
LEADED COLORED GLASS



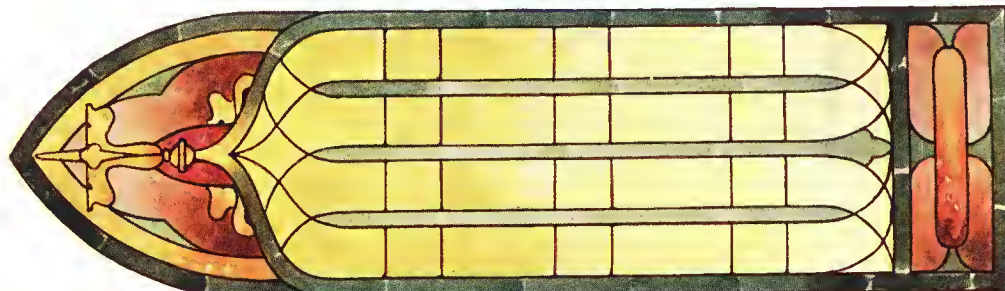
1438. \$2.50 square foot



1437. \$2.25 square foot
Inscriptions, \$3.00 extra.



1436. \$1.65 square foot
Emblems, \$5.00 extra. Ventilators, 60c lineal foot.



1435. \$1.50 square foot

